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GENERAL INDEX.

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ORIGINAL ARTICLES.

(No paper published or to be published in any other medical journal will be accepted for this department. All papers must be in the hands of the Editors on the tenth day of the month preceding that in which they are expected to appear. Reprints may be had at reasonable rates if a WRITTEN order for the same accompany the paper.)

SKETCH OF THE LIFE OF PASTEUR.*

By OLIVIER L. POTHIER, M.D.

New Orleans, La., December 11th, 1922.

Mr. President, Members of the Orleans Parish Medical Society:

We are assembled here tonight to commemorate the centennial of the birth of the greatest scientist, if not the most striking figure of the nineteenth century, Mr. Louis Pasteur.

What can I say that you have not already heard, how can I add to the eulogies of him who, soaring to the summits of science, opens to us vistas of hitherto unknown worlds? For he is the founder of Stero Chemistry, the creator of Bacteriology, the father of Preventive Medicine, and the instigator of Antiseptic and Aseptic Surgery. In the forty-eight years of his scientific activity he revolutionized the scientific world, transformed the empyric methods of the age preceding him into the exact, precise and rigorous methods of research and control of his era, and created new sciences: In 1848 it was Molecular Disemetry; 1857, Fermentations; 1862, Disproves Spontaneous Generation; 1863, Studies on Wines; 1865, Diseases of the Silk

*Read Before the Orleans Parish Medical Society, December 11th, 1922.

Worm; 1871, Studies on Beer; 1877, Virulent Microbic Diseases; 1880, Vaccinating Viruses; 1885, Prophylaxis of Rabies. The most wonderful crescendo of scientific discoveries ever attained by a single mind, and reaching its apotheosis in the erection of a monument to perpetuate his memory and his remarkable methods, the Pasteur Institute of Paris.

His astounding attainments aroused the scientific world, and created such enthusiasm in France and in his native town, that in 1880 an ovation was organized in Dole, a town of the Jura, to celebrate his fifty-eighth birthday. On that day, escorted by the officials of the municipality, scientists, co-workers and pupils, he was taken in triumph through the city amid the acclamations and ovations of his fellow citizens, in front of a modest home in the small street, Rue des Tanneurs, and in his presence, as a climax to his triumphant march, was affixed on the face of this house a tablet on which was inscribed in letters of gold:

Ici est né Louis Pasteur,
Le 27 decembre, 1822.
Here was born Louis Pasteur
On the 27th of December, 1822.

In this small house of the Rue des Tanneurs, he lived three years, for in 1825 his father, an old soldier, decorated on the battlefield and who, like most soldiers, returned from the army almost destitute, by hard and arduous labor and economy had succeeded in purchasing a small tannery in Arbois. It was here that Louis Pasteur spent his childhood, surrounded by the affection and love of his parents. His mother, young and full of enthusiasm, visualized the great things that she planned for her boy. The father, more placid and calm, a home body, caring more for his books after the day's work, was more practical. Both, however, were enraptured in their little Louis, and decided that they would make a man of him, and especially would see that he received a thorough education. They took pride in preparing him for his first school, The College Communal of Arbois, where he was entered as half boarder.

The smallest of the pupils, little Pasteur was so proud to enter school that the first days he came with an armful of ponderous dictionaries, which, however, he had no use for. His father at night constituted himself his mentor, but young Louis was

not so enthused at first by his studies, and many were the evenings when his father had to reckon without him, for Mr. Louis had gone fishing or was busy sketching some neighbor or the children. In fact at one time many wondered if he would not become a famous artist. Some of these pastels are still extant all signed and remarkable for their exactness. Later, when he began to become known as a chemist, an old lady of Arbois remarked: "It is a pity that he has become encumbered with all this chemistry, he has missed his vocation, for he would probably have become a renowned artist." However at the time he enentered the year of sciences, he changed totally, putting away his fishing tackle and his crayons, he devoted himself seriously to his work. From this day his passion for study and knowledge knew no bounds. From that moment he led his class. His progress was such that the principal of the college remarked that he would attain the professorship, but not of a small college, but of the great Ecole Normale.

There being no professor of philosophy at Arbois, he was transferred to the Royal College of Besancon where, after his first scholar year, he received his Baccalaureate of Letters and was appointed for the ensuing term, Quiz Master (Maitre Repetiteur), receiving as such his board and lodgings and twenty-four francs per month. It was while there that every morning at four o'clock he was awakened by the night watchman, who admonished him not to let the demon of laziness get hold of him. He was then eighteen years of age. During the following two years, while discharging his duties at Besancon, he was preparing for the examinations of the Ecole Normale, which he took in 1842. He passed, but he was reported fourteenth on the list. This did not satisfy him, so he refused the appointment and remained in Paris to prepare for the next year, and in 1843 he passed his examination and entered the great school, fourth on the list.

He had become passionately fond of chemistry and gave most of his time to it under Professor Dumas at the Sorbonne and Professor Balard at the Ecole Normale. On Sundays he would spend his time with Mr. Barruel, the preparator of Mr. Dumas, anxious to learn the manipulations and technic of the laboratory. He became so enthused with laboratory manipulations that he decided to repeat all the technic of the preparation of phosphorus

from bones. He purchased a few bones from a butcher, from which he extracted sixty grammes of phosphorus, which were for a long time, and probably yet, exhibited in one of the laboratories of the school, as an example of prolonged manipulations. He spent his time in the laboratory or in the library of the school. It was while in the library one day that he came across the now famous note of Mitscherlich, which he had communicated to the Academy of Sciences. This note of Mitscherlich struck Pasteur. It stated that the tartrate and paratartrate of sodium and ammonium, though identical in every way, differed in that they did not have the same action on polarized light, the tartrate turning it to the right, while the paratartrate was neutral. This dictum was iconoclastic and overthrew all that was known then of the molecular arrangement of crystals. Mr. Pasteur could not be reconciled to it nor admit its truth. He determined to study the question, and immediately began a profound study of crystalography, taking as his guide the extended work of Mr. de la Provestaye, whose experiments he repeated, using the tartrate and paratartrate of sodium and ammonium. When suddenly during one of his manipulations, he found that all the tartaric acid crystals were dissymmetrical, and all the paratartaric acid crystals were symmetrical, a point that had evidently been overlooked by all other observers. Finally he solved the problem by producing a right rotating tartaric acid, already known, and a left tartaric acid, unknown. In this experiment his minuteness, exactness, determination and patience are well exemplified, for in the last manipulation he had to pick by hand the right and left rotating crystals. His report at the Academy of Sciences, in the presence of such luminaries as Arago, Biot, Dumas, de Senarmont and Ballard created a sensation, and was received with more or less incredulity. However a committee of one was appointed to investigate this report, and the exacting Biot was chosen. It is interesting to know that Biot took Pasteur in his own kitchen and exacted that he prepare his solutions and crystals there, and from material that he, Biot, had selected. When the crystals, prepared in the presence of Biot as requested, were ready Biot instructed Pasteur to take them to his laboratory at the College of France and to place the right rotating crystals to his right and the left rotating crystals to his left, and to make a statement of the fact, which Pasteur did. When Biot

made the final test, he was almost overcome by what he saw, and taking Pasteur by the arm he said to him: "My dear child, I have loved science so much, that this makes my heart beat." Pasteur was then twenty-five years of age, and Stereo-Chemistry was founded.

In his further studies of symmetrical and dissymmetrical crystals he found that, if he introduced a living organism in his solutions, this organism would absorb the right rotating acid, and leave the left rotating acid in solution. This new discovery brought a new problem, which made him undecided on his future work, when suddenly he was appointed, at thirty-two years of age, Dean of the Faculty of Sciences at Lille, whose principal industry is the manufacture of alcohol. This decided him to take up the study of fermentations.

The theory of the moment on ferments was that of Liebig: "That ferments were all kinds of nitrogenous substances: albumen, fibrin, casein, etc., or liquid containing them, in state of alteration, produced by the contact of air." All the authors of the time seemed to agree with Liebig. Without going into the details of the experiments of Pasteur, and how he proved his findings, he finally demonstrated that all fermentations were produced by a living microscopical organism, and that each form of fermentation had its specific organism.

From this discovery to the fact that Spontaneous Generation did not exist was only one step further in the world of the Infinately Small, as Pasteur described these minute organisms.

To appreciate and understand the work of Pasteur, and the opposition that he met, we must revert to this time. It was then still believed by many that mice could generate spontaneously from ferments contained in soiled shirt reacting on a handful of wheat, which were packed in a vase, or that scorpions would crop out of crushed grass stuffed in a hollow brick. Further that all decomposing or putrefying substances was filled with spontaneously generated organisms. In 1858 Mr. Pouchet read a report to the Academy of Sciences, in which he affirmed that he had demonstrated the spontaneous generation of microscopic organisms. This report, if true, would disprove all that Pasteur had advanced in the fermentations, hence the necessity of further study.

About this time he had been called to Paris to the Ecole Normale to take charge of the superior scientific courses. Though an honor, he was only thirty-five. Not being on the teaching staff he was without a laboratory. Not being able to obtain one from the Minister of Public Instruction, he installed one at his own cost in the attic of the Ecole Normale, to continue his researches. When Biot heard of his decision to take up the study of Spontaneous Generation he strenuously opposed it, telling him that he was wasting his time. Dumas also tried to dissuade him. But he was not to be discouraged and kept at his work. In 1864 at The Sorbonne, in a remarkable lecture to a distinguished assemblage composed of scientists, philosophers, society women, priests and writers, he demonstrated that the particles of dust carried by the air, or deposited on objects about the laboratory, contained the germs which developed in suitable substances and produced the phenomenon of supposed spontaneous generation. By a variety of experiments, in which his ingenuity was tested to its utmost, he demonstrated the truth of his assertions. The most important of these was that in which he introduced into a flask a putrescible fluid, and then bending the neck of the flask to an acute angle, and then drawing the end of it to a minute opening, he boiled the contents of the flask until steam spouted from the opening. After this treatment he demonstrated that he could keep the fluid indefinitely without contamination wherever he put it and only produced contamination when the neck of the flask was filed off. For every obstacle brought in opposition to his theory he developed a new method of research and finally in January, 1864, a commission was appointed to decide of the validity of his assertions. At the request of his opponents the commission met on June 15th, and at the meeting refused to abide by the rules of the commission and retired.

His studies on wine are only the corollary of his studies on fermentations, and was an industrial application of the scientific facts that he had demonstrated. That the different diseases of wine were due to microorganisms and he proposed the heating of wine to 55 or 60 C. to prevent the appearance or the growth of these, developing what we know now as pasteurization.

In 1865 siriculture in France was at its lowest ebb, there had been a loss of 100 million francs, when a petition from 3,600 citizens from the departments where silk is manufactured, was

sent to the senate, requesting aid from the government. A commission was appointed of which Mr. Dumas was the reporter, and in rendering his report he suggested that Mr. Pasteur be asked to investigate the disease that had produced such damage. Pasteur recused himself, protesting that he had never even touched a silk worm. So much the better, retorted Mr. Dumas, you will have to guide you your own observations. Pasteur however was not convinced but through deference to his old teacher, he accepted, and at once busied himself about the work.

On the 6th of June, 1865, he moved to Alais, establishing himself in a small house at three kilometers of Alais. A few hours after his arrival he observed the presence of small corpuscles in the bodies of a few silk worms, and demonstrated them to the president and several members of the committee who had never seen them. During five years he returned several months each year to this small house in Alais, at what is known as le Pont Gisquet, there, aided by Mrs. Pasteur and his daughter, he raised silk worms. During this period many of his pupils and preparators of the Ecole Normale, among them Duclaux, Gernez, Maillet, Raulin, came and worked with him, such was the devotion and respect of all those who were associated with him in his work. After these five years of research and patient labor, he reported two diseases fatal to silk worms, pebrine and flacherie, for each of which he proposed a method of prevention. The method is well known now and consists in the microscopical examination of the female butterfly and its ova, and if found infected to reject them.

After this remarkable work he returned to Paris, but his continuous labors had undermined his health and in the month of October, 1868, he was stricken with apoplexy with left hemiplegia A few days after, thinking his death close at hand, Pasteur dictated to his wife a note on the subject of silk worm disease and eight days after this note was read to the Academy of Sciences. For months his family and friends were anxious less the end come. But he finally rallied, though he never completely regained the full use of his left side. During his illness he chafed at the opposition offered to his methods to prevent the disease of silk worms. Finally in January, 1869, he decided to once more go to Alais to try new experiments, and nothing could hold him. Unable to work himself, from his invalid chair he directed

the experiments, and controlled his former work and returned, having established once more the surety of his methods. However it was not until called by the Emperor who asked him to take charge of the siriculture of the ville Vicentina in Austria, the property of the Prince Imperial, that his methods were finally adopted. It was with enthusiasm that he accepted, though in his travel through France and Italy he had to travel lying down and to be carried in an invalid chair. In one season at this villa, from a total deficit, by his methods he produced a net benefit of twenty-six million francs. On his return the Emperor in July, 1870, appointed him senator, but soon after the empire fell and like many other things his appointment was lost, but Pasteur had more important things to think about besides that of becoming a senator.

For two years he remained at Arbois, for the first time in his life unable to work, on account of his health and the discouragement produced by the disaster of the Franco-Prussian war.

In 1871, having recuperated he immediately wished to return to Paris but was prevented by the Commune. It was then that Mr. Duclaux, one of his former pupils, now professor of sciences at Clermont-Ferrand, offered him his laboratory, which he gladly accepted. It was then that he made his study on Beer and developed a scientific process of manufacture, which consists essentially in the sterilization of the mash and the fermentation of it with pure yeast, and the pasteurization of the finished product. The latter especially applicable to bottled beer.

The physicist, Robert Doyle, speaking about fermentations, said: "Whoever will be able to understand ferments and fermentations, will more than anyone else be able to explain the morbid phenomena of fevers as well as of other infections. These phenomena will probably never be understood without a thorough knowledge of the theory of fermentations." In 1864 a German professor, Dr. Traub, accepts the observations of Pasteur on fermentations and declares that the theory of Liebig is untenable after the research of Pasteur. This remark was made while discussing the intravesicular ammoniacla fermentation of urine.

In February, 1876, Tyndall wrote to Pasteur the following: "For the first time in the history of science, we have the right to hope that medicine will soon relinquish empyrecism and es-

tablish scientific causes for epidemic diseases. When this great day will come, humanity, in my opinion, will recognize that it is to you that it owes its greatest gratitude.'' So that everywhere his discoveries, as well as his previsions, had stimulated researches on infectious diseases. One of the most important at the time was the report of Davaine and Rayer in 1850 in the Bulletin of the Society of Biology of Paris, on Charbon. This report excited such a series of discussions between Davaine, Jaillard, Leplat and Koch, that Pasteur became interested and wanted to get to the truth of the whole matter. It is then that he brought again his method of obtaining pure cultures of the organism and was able to produce Charbon at will. But some of his opponents maintained that in the blood of many of their inoculated and dead animals no organisms could be found. Meeting this objection he brought out the fact that in the animals inoculated and killed by Jaillard and Leplat in their experiments, that these animals had died of infection by the sceptic vibrio and not of Charbon. He further established that Charbon was aerobic while the sceptic vibrio was anaerobic, and that both were propagated by spores. He was then entirely launched in the study of the causes of diseases. His experiments of Charbon in fowls was the first step in the study of immunity. Later his work on the cholera of fowls accentuated this study of immunity and another fact the attenuation of virulent cultures and the development of vaccines. Having discovered the vaccines for the cholera of fowls, he produced that of Charbon. It was on the 28th of February, 1881, that Mr. Pasteur announced to the Academy of Sciences his discovery of the vaccines of Charbon.

I will not mention here the series of studies and experiments that followed his discoveries. At his laboratory of the Ecole Normale, many diseases were studied: Yellow Fever, Furunculosis, Puerperal Scepticemia, and etc. The one predominant study however during a period of five years, was rabies. It is interesting to see how he gradually came to use the brain and spinal cord to produce rabies and how he finally used the intracranial route of inoculation. Then the discovery of the fixed virus and finally the method of attenuating the virus. He was then ready to experiment on the prevention of rabies. All of his experiment on animals had been successful. The commission appointed to investigate his new discovery was favorable

and confirmed his findings. Then it was that on the 4th of July, 1885, at eight in the morning Jules Meister, a child nine years of age, son of a baker of Steige, Alsace, was bitten by a mad dog and sent to Pasteur for treatment. It was on the 6th of July that he arrived at the laboratory of Pasteur on Rue Vauquelin and the first inoculation was given at 8 p. m. On the 18th of July he received his last treatment, and he was kept under observation until the 27th when he was allowed to return home, but with the understanding that he was to report by letter at first every fourth day, then every eighth day, then every fifteenth day. On the 26th day of October, 1885, Mr. Pasteur reported his first case of the prevention of hydrophobia to the Academy of Sciences. After young Meister, the shepherd Jupille from Ura, who, to save a group of children, stopped a mad dog and was seriously bitten before he could kill it, was the next. After this the laboratory on the Rue D'Ulm became the center of attraction of the scientific world, and from everywhere came patients bitten by mad dogs. All returned well. One, however, came thirty-seven days after being bitten, a little girl, Louise Pelletier, ten years of age, on the 9th of November, 1885. Pasteur was profoundly anxious and worried of the delay that had occurred and could not refrain from asking the parents why they had not come sooner. He knew the small chance of success in this case, but as he said: "Had I only one chance in ten thousand to save this child I must not hesitate." The child was treated, and the treatment completed, when a few days after December the third she died of hydrophobia. This death, as Pasteur had surmised, was taken up by his opponents, who even went so far as to say that the child, Louise Pelletier, had died not from hydrophobia but from the inoculations. How many times have I not heard the same thing whenever we were unfortunate enough to lose one of our cases at the Pasteur Institute of the Charity Hospital. However, the cases continued to come to Rue D'Ulm and their successful results was more than an answer to these infamous delegations.

This last glorious achievement of Mr. Pasteur created such admiration and enthusiasm that a popular subscription was organized to establish and build a memorial to Pasteur, where his studies and his work could be continued. And so it was that the Pasteur Institute was inaugurated and still remains as a

tribute to glory and world-wide recognition of the discoveries and methods of Pasteur. This monument to his scientific attainments is only one of the many honors conferred upon him. In 1856 the English Royal Society conferred upon him the Rumford Medal for researches on the Polarization of light with Hemihedrism of crystals; 1863, Professor of Geology and Chemistry, Ecole des Beaux Arts; 1867, Professor of Chemistry at the Sorbonne; 1881, The French Academy; 1882, a medal from the Russian Society of Rural Economy; in 1882, the Albert Medal; in 1887, Permanent Secretary of the Academy of Sciences. He was conferred the full order of the Legion of Honor, Orders from Russia, Denmark, Greece, Brazil, Turkey, Norway, Portugal, and many other honors which I will not mention.

In 1889 he gave up all his posts to confine his activities entirely to the direction of the researches and studies of the Pasteur Institute. Amongst his collaborators which he formed were Chamberlan, Roux, Thuillier, Duclaux, and many others. He attracted many other workers at the Institute.

On December the 22nd, 1892, his seventieth birthday, a magnificent celebration, his jubilee, to which contributions were sent from every civilized country and all the great institutions of learning, was organized.

Three years later at five in the afternoon, September the 28th, 1895, Pasteur died, at his home at Villeneuve-L'Etang, near Sevres, holding in one hand that of his cherished wife and in the other his crucifix. His ashes repose in a special chapel tomb in the Pasteur Institution in Paris. This chapel seems to form the main part of the foundation of the building and is symbolic of the life of the man in whose honor it was erected. Above his tomb are inscribed these words that he pronounced at the panegeric of Little: "Happy the man who bears within him a divinity, an ideal of beauty and obeys it, an ideal of art, an ideal of science, an ideal of country, an ideal of the virtues of the Gospel."

It is befitting that we should close this sketch of the life of Pasteur that he gave to young men: "Young men, young men, devote yourselves to the sure and powerful methods,, of which we as yet know only the first secrets. And I say to all of you, whatever may be your career, never permit yourselves to be overcome by degrading and unfruitful skepticism. Neither permit

the hours of sadness which come upon a nation to discourage you, live the serene peace of your laboratories and your libraries. First, ask yourselves, what have I done for my education? then, as you advance in life, what have I done for my country so that some day that supreme happiness may come to you, the consciousness of having contributed in some manner to the progress and welfare of humanity. But whether our efforts in life meet with success or failure, let us be able to say, when we near the great goal, I have done what I could."

THE INFLUENCE OF PASTEUR ON SURGERY.*

By HERMANN B. GESSNER, M.D., New Orleans, La.

I invite you to join with me in visualizing a modern operating room. Before the patient is brought in, we look over the apartment and observe its tiled floor, its smooth walls, its rounded contour, free from crevices and shelves such as might shelter dust in any considerable quantity. Ranged on one side in a wide arc, we find the tables of supplies, piled with packages of steam-sterilized gowns, sheets, towels, pillow-slips, gauze, sponges and rubber gloves, trays of boiled instruments, besides sutures and ligatures prepared in a special way. They are presided over by a nurse attired in a sterile white gown, with head—all but the eyes—covered with a white cap, and with well scrubbed hands encased in rubbed gloves. The patient is brought in, is anesthetized; the surface to be operated on is prepared by the brief application of sterile mops, moistened with chemical preparations. All of him but this surface is covered with sheets, towels and pillow cases. Finally in comes the surgeon, attired like the nurse. The operation proceeds in an atmosphere of serene confidence; its completion is followed by the application of sterile gauze secured in place by means of bandages and plaster. A week or so later the dressings are removed, a few sutures taken out, a superficial dressing applied for protection. This picture I present to you as that of a routine operation of today.

Less than sixty years ago quite a different aspect was presented by the operating room. If you had visited the Charity Hospital of New Orleans at that time you might have seen, before the operation you came to observe, an autopsy being held.

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*Read Before the Orleans Parish Medical Society, December 11th, 1922.

The table, cleared of its cadaver ocupant, was washed off and quite simply prepared for its living patient, who followed. The surgeon came in attired in his street clothes with an apron to protect them against soiling. He washed his hands when he got through the operation, to remove the blood, pus, etc., that might have soiled them. Marine sponges were used in operation after operation; the wound was dressed with charpie picked by convalescent patients with unwashed hands. Following the operation there was a period of great anxiety, for the arch-enemies of the surgeon, erysipelas, hospital gangrene, pyemia were frequent invaders of the crudely made wound; this was expected to suppurate, did so except in very rare instances, consequently had to be dressed frequently; the ligatures of vessels hung out of the wound, were gently pulled on daily till they came away at the end of two weeks, sometimes followed by a profuse and exhausting secondary hemorrhage. There was a high mortality; the morbidity was proportionately heavy; the results in the patients who recovered were marred by scars and deformities. Surgery at this time was necessarily limited to urgent cases, largely to lesions of the extremities. When it went beyond these, it was usually to relieve some painful affection such as urinary stone or some collection of pus like a liver abscess. The visceral cavities of the body—the cranium, the thorax, the abdomen—were rarely invaded, and then with fear and trembling.

As late as 1874 the Charity Hospital reports list only 24 operations among a total of 5,774 patients, about 4 to 1000, contrasting markedly with a total in 1921 of 3748 operations among 18,162 patients, about 200 to 1000. After a lapse of fifty years the proportion of operations to patients has been multiplied by 50. Such has been the result of the change from the crude technique of the pre-antiseptic era to the refined methods of the present day, the outer forms of which have been said to remind onlookers of a religious ceremony. They are indeed identified with the religion of service of which the French chemist, Henri Pasteur and the English Quaker, Joseph Lister, will ever be known as high priests. It was Lister (then professor of surgery in Glasgow) who in 1867 led the way to security in surgery—so far as freedom from infection is concerned—by the publication in the Lancet of his paper, "On a New Method of Treating Compound Fractures, Abscess, etc., With Observation on the

Conditions of Suppuration." In the same year appeared in the Lancet a second and more important paper, "On the Antiseptic Principle in the Practice of Surgery," read before the British Medical Association in Dublin on August 9, 1867, in which he reports that "during the last nine months not a single instance of pyemia, hospital gangrene or erysipelas has occurred in them (his hospital wards)." Repeatedly he gave credit to Pasteur for the ideas which led him to develop surgical antisepsis. I take the liberty of quoting from his writings at this time: "But when it had been shown by the researches of Pasteur that the septic property of the atmosphere depended, not on the oxygen or any gaseous constituents, but on minute organisms suspended in it, which owed their energy to their vitality, it occurred to me that decomposition in the injured part might be avoided without excluding the air, by applying as a dressing some material capable of destroying the life of the floating particles."

Again: "We know from the researches of Pasteur that the atmosphere does contain among its floating particles the spores of minute vegetables and infusoria, and in greater numbers where animal and vegetable life abounds, as in crowded cities or under the shade of trees, than where the opposite conditions prevail, as in unfrequented caves or on Alpine glaciers." At Pasteur's jubilee in 1892 Lister paid a feeling tribute to the man whose work he had been the first to appreciate.

In his third Huxley Lecture, delivered in 1900, after his retirement from active work, he referred to a publication of his father, J. J. Lister, "On the Improvement of Achromatic Compound Microscopes," showing how his attention had early been directed to the study of minute living things. He went on to speak of his own study of inflammation in the web of the frog's foot and of his interest in pyemia, which he tried to prevent by using antiseptic washes (of his and his assistants' hands) and by drying the hands with a towel before passing from one dressing to another. He believed, "with chemists generally, that putrefaction was caused by the oxygen of the air." The lecture ends with the sentence: "It will thus be seen that I was prepared to welcome Pasteur's demonstration that putrefaction like other true fermentations, is caused by microbes growing in the putrescible substance."

The work of Pasteur and of Lister sowed fertile seed in a fruitful soil. The introduction of ether and chloroform in 1846 and 1847, respectively, had greatly broadened the field of surgery. Surgeons no longer hurried through operations on conscious patients. Anesthesia made possible the deliberate and painstaking operations of a new generation of medical men, who found a greatly increased number of patients attracted by the elimination of operative pain. This increased activity made more conspicuous the dread complications, to which Lister referred when he told the B. M. A. in Dublin that for nine months his hospital wards had been free from hospital gangrene, pyemia and erysipelas. With anesthesia secured, relief from sepsis was eagerly sought. Lister's methods were speedily taken up. Within the calendar year the Lancet had an editorial comment to the effect that: "If Prof. Lister's conclusions with regard to the power of carbolic acid in compound fractures should be confirmed by further experiment and observation, it will be difficult to overrate the importance of what we may really call his discovery."

Edinburgh and London soon followed Glasgow in the application of the methods recommended by Lister. As might be expected, some discordant notes were sounded. There were those who said that they had tried the antiseptic method and had been disappointed. Still others said that though the method was good, Lister did not deserve credit for it because carbolic acid had been used in Paris and in London. Further, criticism was leveled at the frequent changes in Lister's technique, which was directed at keeping the carbolic acid—at first used only for accidental wounds—from escaping by means of block tin, waxed cloths, etc. The dispassionate verdict of history is that Lister deserves credit for the purposeful use of phenol to control infection in wounds. The failure of other surgeons to obtain similar results does not astonish those who know how technique may suffer mutilating changes at the hands of the inexact. The change of technique from time to time was to be expected from a truth-seeking man like Joseph Lister, who kept ever reaching out further and further to improve methods and results. He has been followed in this way by a series of innovators who have succeeded in making antisepsis and asepsis an ever-living art, not even now fully crystalized. While the British cities

fell in line behind Glasgow and Edinburgh and were followed slowly by Italy and France, it remained for Richard von Volkmann in Halle, Saxony, to give the first demonstration of the Listerian methods in a massive and convincing fashion. Driven to despair by the shocking mortality in his hospital wards, he studied the methods of Lister for fuly a year, then applied them with scrupulous care. So great was his success that Lister s'visit to the continent in 1875 was turned into a triumphant tour, with public entertainments at Munich and at Leipsic. In our own country the profession was quick to note the possibility of the Listerian method. In the year of their appearance Lister's introductory papers were reviewed in the American Journal of the Medical Sciences. As early as 1869 Dr. Frederic D. Lente of Cold Springs, N. Y., suggested the use of phenol for preventing infection of surgeons' wounds, not knowing that Lister's work had already progressed to this point. In New Orleans the most ardent propagandist for the new method was Dr. Moritz Schuppert, who having heard in 1874 the reports of von Volkmann's success in Halle, went over in 1875 to personally observe the application of the method and judge for himself of the results. In the N. O. Medical and Surgical Journal of March, 1876, he gave his colleagues a preliminary report on the actual practice of antisepsis by von Volkmann, following this with a paper in the January, 1878, number entitled "Lister's Antiseptic Treatment of Wounds in Wards 3 and 4½ of the Charity Hospital of N. O. During 1875, 1876, 1877. In this later paper he gave a full report on the results obtained in Halle, showing that in a period of 15 months, 5000 cases had been operated on with not a single suppurating or putrefying phlegmonous inflammation, not a single acute collection of pus, besides referring to his own application of the antiseptic method.

Within 10 years of the appearance of Lister's first paper surgical antisepsis had spread to the limits of the civilized world. It is interesting to note, in showing the preparation of the medical world to seize on the method, that in obstetric practice this life-saving advance had been made, to a considerable degree, more than 20 years previously. In 1843 our own Oliver Wendell Holmes, better known to us for his literary productions, had published a paper "On the Contagiousness of Puerperal Fever," asserting that this disease may be conveyed by physicians from

patient to patient, and recommending among other things the washing of the accoucheur's hands with calcium chloride. A little later, in 1848, Ignaz Philipp Semmelweis of Vienna wrote along similar lines, showing the reduction of the mortality rate in the lying-in wards from 9.92 to 1.27%. Both men had encountered violent opposition which in each instance was met with unflinching courage. It was typical of Lister to acknowledge, when he learned of Semmelweis' work, that the latter had been his forerunner.

In the foregoing it has been my task to trace our infection-free technique, typical of which is a report from one clinic of only 1.7% of infections in 6,825 surgical cases, including 1,494 on the stomach or intestines, to Lister, and his inspiration to Pasteur. Looking retrospectively at the period under consideration, it is interesting to note that a long period of slow progress in the study of minute life culminated in the work of a chemist who laid the broad foundations of bacteriology and parasitology; that a practising surgeon at once saw the significance of his researches and applied their essence to his daily work; that his fellows were at once convinced of his sincerity and followed him with a benefit to humanity difficult to valuate.

THE INFLUENCE OF PASTEUR ON BACTERIOLOGY AND PATHOLOGY.

By JOHN A. LANFORD, M.D.

Pasteur early in life showed certain traits which marked him for a career of importance—in his daily tasks he was most scrupulously accurate and truthful.

It was in the field of crystallography that Pasteur, led by an interest in the ingenious and delicate methods of the science, first showed his exceptional capacity to observe minutely things and processes and to correlate and interpret the results of his observations. He began by carefully repeating a series of crystal measurements on tartaric acid, racemic acid and their salts shortly before published by Provastaye, during which study he observed a very important but unobtrusive thing which the physicist had overlooked—regular evidences of hemi hedral facets. This research culminating in 1848 with the discovery of the nature of

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racemic acid proved that Pasteur had already made himself master of the experimental method.

At this period of Pasteur's career the prevalent doctrines of fermentation were unsatisfactory and uncontrolled by experimentation although it was well known that putrescible materials can be permanently protected from the processes of fermentation and decomposition by boiling and exclusion of air. It was thought, too, that alcoholic fermentation was due entirely to a chemical process and that oxygen was sufficient to excite the process. Schaun, however, showed that the necessary *something* to initiate the fermentation of sugar is destroyed by heat; that it is a living organism—but he failed to maintain aggressively the new doctrine of the dependence of fermentation on micro-organic life. The result was the bacterial hypothesis failed to make any important advance in the face of the sharp criticism and ridicule of Leibig whose word was considered final in all matters chemical and physical.

Leibig and others at that time who were striving to explain the phenomena of life by physical and chemical laws considered it a retrograde step to assume that a living organism like the yeast plant is the cause of alcoholic fermentation and effectively pointed to the fact that sugar undergoes other kinds of fermentation than alcoholic such as lactic and butyric and nothing like a yeast cell was seen in these allied types of fermentation. Leibig thought that these various kinds of decomposition had one feature in common—the presence of a small quantity of nitrogenous substance which acted as the real ferment causing fragmentation of the molecule.

Pasteur considered the position of Leibig as wholly unintelligible as it rested more on prejudice than experimental evidence, and resolved to investigate the subject of fermentation from the standpoint that the process is due to the mediation of living organisms. This research ended in the discovery of a specific lactic acid organism and in the cultivation of this and other organisms in an artificial media free from albuminoids. He then formulated the hypothesis that different types of fermentation are dependent on different types of microorganisms and this idea of specificity soon established in relation to ordinary decomposition ultimately became the basis of our modern knowledge of the infectious diseases.

The research on lactic acid fermentation marked the birth of the science of bacteriology and completely disproved the chemical theory of fermentation—it led to the development of a method designed to secure pure cultures from fluid media, the use of culture media of known composition and the chemical study of the products of decomposition, and were achievements of the greatest significance for the future of the great department of knowledge which has revivified the biological sciences; it was while studying fermentation that Pasteur noticed that certain motile organisms capable of producing butyric acid decomposition of sugar behaved very differently according to their position with reference to the cover glass, those at the center being actively motile while those at the periphery and exposed to the air were checked. From this observation came the fundamental conception of anaerobic life.

Further studies which seemed close to the subject of fermentation were the manufacture of vinegar and the diseases of wine. The study of vinegar led to the recognition of the microorganic nature of the vinegar film and brought acetic fermentation into line with lactic and butyric fermentation. In the study of diseases of wine, he recognized the dependence of sour, bitter and muddy wines on the presence of definite types of living ferments and was able to control these disturbing agencies by the use of moderate heat. From this recommendation has sprung the use of the widely used method of sterilizing which is called "Pasteurization."

About this time he was called upon to solve the mystery of the plague which was threatening the extinction of the silk worm industry. He approached it with the conception that if the butterfly is sick, reject all of its eggs. It required five years of Pasteur's most devoted attention to establish this conception on a scientific basis, during which study he noted certain facts which have a striking analogy in the diseases of man—that is the various susceptibilities of different individuals to the same microorganism, the influence of the path of infection and the fact that bacteria acquire increased virulence after passage through the bodies of living organisms.

The idea that some diseases are due to living organisms was suggested by Boyle 200 years before the days of bacteriology and was discussed from time to time by scientific men. Many of

the leading scientific men were hostile to any mere hypothesis of contagion by germs and the illuminating cell doctrine of Virchow was not especially favorable to the idea that living organisms from outside can excite disease by fixing themselves and developing in the body.

Pasteur's training and temperament and genius admirably fitted him not merely to detect the great truth of bacteriology but to force it upon a doubting world. But while he took a large part in the conception of disease, the field was prepared by others, especially by the fine observations of Davaine and the experimental methods of Koch.

Davaine had in 1850 observed thread-like bodies in the blood of animals dead of anthrax but not until thirteen years later, incited by Pasteur's work on butyric acid fermentation, did he proclaim them as the cause and only cause of anthrax. However, he was unable to prove his statements, and Pasteur a little later independently worked out some of the most striking features of the etiology of anthrax and convinced the best scientific minds of France of the relationship between the bacilli of Davaine and the perpetuation of the anthrax plague.

In searching for fresh proof of the bacterial origin of disease Pasteur made some visits to the hospitals of Paris. Here he found the same pus exciting organism in the pus from a series of boils, and osteomyelitis, and that these two conditions so different in clinical characteristics are identical in etiology. He soon announced that childbed fever is a septicaemia commonly due to a coccus in chains which could be detected in the cavity of the uterus, in the blood at the uterine sinuses and in the blood of living patients.

Not long after the beginning of the anthrax study, the attention of Pasteur was directed to a disease which was destined to play a remarkable part in leading to the great goal toward which the researches of the great master were carrying him—the discovery that it is possible experimentally to induce immunity to disease caused by virulent microorganisms.

An organism had been detected by Perroncito in chicken cholera and Pasteur succeeded in growing the organism outside of the living body and experimentally inducing chicken cholera by means of these cultures. Returning to the laboratory after a short absence, he found that his cultures of bacilli of chicken

cholera had failed to grow or had grown only feebly. To increase the activity of these bacteria, they were now inoculated into normal fowls. The results were disappointing as the inoculated fowls showed no signs of the disease. This made it necessary to isolate and grow actively pathogenic bacteria from fowls with chicken cholera. Having done this it occurred to Pasteur to inject with fresh and virulent bacteria the fowls previously inoculated with the attenuated strain. To his surprise, nearly all these previous fowls resisted the virulent organisms. They had been immunized by mean of attenuated cultures and a new principle had been discovered in medicine.

It appeared probable that what had been accomplished for chicken cholera could be extended to other diseases—one special consideration made him hopeful as to the possibility of immunizing sheep and cattle against anthrax. He had noticed that certain sheep long exposed to anthrax through grazing on infected pasteurs did not die after an experimental inoculation with a virulent culture whereas previously unexposed animals of the herd died promptly after such inoculation. Further, he knew that fowls could be immunized against chicken cholera by feeding them the specific germ of the disease and this fact strongly suggested a similar explanation for the anthrax immunity which he had noticed.

He tried to attenuate the anthrax organism in the same way as were effective with the chicken cholera organism but because of the capacity of the anthrax bacillus to form spores, he was unsuccessful. He finally succeeded however in growing anthrax without spore formation at temperature of 42-43 degrees C. in presence of oxygen. By varying the procedure somewhat, he was able to prepare a series of anthrax vaccines of different degrees of activity, the use of a mild vaccine being followed by that of a stronger one in course of immunization.

The genius of Pasteur has given to biological science several definite methods of modifying the pathogenic character of certain microorganisms as already described, but while studying swine erysipelas, he found that the virulence of these organisms could be increased or decreased by passing through susceptible or non-susceptible animals. From a modest beginning, this research has grown to be the crowning work of his life in the sense of embodying the fullest and, in some respects, most original

expression of his ideas in the use of experimentally enfeebled viruses for the investigation of infectious processes.

The transmission of rabies through bites made probable the infectious nature of the disease and encouraged the hope of the isolation of the organism from the saliva of rabid dogs. But all his efforts to detect the specific organism were fruitless and, further, the experimental transmission of the disease by the saliva is a matter of great uncertainty. Because of the uniformly fatal outcome of hydrophobia, it was impossible to form any opinion as to whether the unknown virus was capable of conferring immunity. He realized that a reliable way must be found to transmit rabies experimentally, and acting on a suggestion of Dr. Dubue of Pau that the disease is essentially one of the central nervous system, Pasteur took small bits of nerve tissue from animals dead of rabies and placed them under the skin of experimental animals. This method was but little improvement but served as a clew to a notable advance, that is the introduction of the rabic nerve tissue directly into the C. N. S. of animals. He then found that rabies regularly followed subdural inoculation with rabic nerve tissue. He found that the first dog showed unmistakable signs after the fourteen days and other animals similar results. He found further that he could increase the pathogenic property by carrying it subdurally through a series of rabbits or reduce it for dogs by carrying it subdurally through a series of monkeys. He thus had at his command three viruses, one of natural strength, one of increased virulence and one of decreased virulence. Later experimients showed that a safe virus could be prepared by drying over caustic potash at 21 degrees C. the spinal cord of rabbits dead of rabies.

By injecting subcutaneously first a weak and subsequently a stronger one into parts with very few nerves, Pasteur succeeded in immunizing dogs against otherwise fatal subdural inoculation. This success suggested the possibility of immunizing human beings with the result familiar to all.

The great research on rabies fittingly marks the culmination of Pasteur's long career as an investigator.

In that investigation can be seen the same technical skill, the same respect for minute detail and the same pertinacity of purpose that had distinguished so many earlier researches, but there

can be seen also a degree of originality and a fertility of resource that excel nearly all previous exhibitions of these powers.

In conclusion we may briefly sum up the influence of this great master by saying that he founded the science of bacteriology and showed the great dependence that biology has on the principles of physics and chemistry.

PASTEUR—HIS WORK AND WHAT IT HAS DONE FOR MEDICINE.*

By J. D. WEIS, M.D.

The history of mankind rolls down to us out of the ages, and intimately interwoven with it is the history of medicine. From the culture of Egypt and biblical times the fogs and mists of superstition and secret cults allow no ray of light to pierce the darkness; from the mythology of ancient Greece and Rome there comes no light save a spark here and there, a mythical Esculapius, a semi-mythical Hippocrates, a Galen, from the utter blackness of the Dark Ages and Medieval times there is no spark to illumine, all is darkness, mist and fog of superstition, cruelty, human and animal sacrifice, disgusting rites and cults and still more disgusting and filthy mixtures in the so-called treatment of the sick, maimed and insane. From these times the only faintest ray is Paracelsus, the arch-quack; and then the Renaissance with its re-birth of the Arts and Sciences brings a lamp-like brightness into the indistinct picture. An Ambrose Paré, a Harvey, a Malpighi, a Von Leuwenhoeh. Begins then a clearing, a brighter picture; a light shines somewhat throughout the whole blackness and obscurity, a dawnlike glow is there for 200 years in medical history. This new radiancé ushers in the daylight of the 19th century, with names like Virchow, Cohnheim, Claud Bernard, Pavloff, Billroth, Paget, von Helmholtz, Bright, and finally, with a greater burst of brightness, the light of great truths is born with Koch, Pasteur and Lister.

One hundred years ago was born in a little town in France this male infant, what one might call a man child. A radiance should have been visible from the cot of this child, for he was to bring mighty truths not only to medical history but to the whole of humanity.

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Pasteur then was born and after some thirty years of life he begins to throw a yet more brilliant light upon the world of science. This light of him pierces the gloomy mist of medical knowledge and from his purely scientific laboratory rays of wisdom enter the hospital. The history of medicine is brought up with a jolt from its fanaticisms, its empiricisms, its blood-lettings and barber-surgeons, its blue-mass purgings and no diagnosis into a science based upon facts. This arc-light is Louis Pasteur. He is shown to be perhaps the greatest scientific man of the last century, certainly the most fruitful, the most unerringly successful. It is interesting to know not only who he is but what he was, what he did and how he did it.

You've heard the excellent portrayal of Pasteur's life. I would like to accent some facts from that life that bear upon the man's work.

There happily happened for me what might be called a personal touch with Pasteur, the man. Some years ago I worked at the Institute Pasteur and the Ecole Normale Supérieur in Paris, while on the International Cancer Commission. My work had to do entirely with the classification and life history of certain saccheromyses or torulae, which an Italian, Sanfelice, had found pathogenic in the sense that their injection into the breast of bitches had produced what he called cancer of the breast in the injected animal. While working at the Institut Pasteur I came into close contact with Roux, Metchnikoff and Chamberland, all of whom had been students of Pasteur, especially Roux, who had been a close co-worker with the great man. It was my work that interested these men and brought back memories of Pasteur, since Pasteur's early work on beer and wines had been with the so-called saccheromyses or yeasts of fermentation. Fortunately for me their interest in my work led to an interest in me and I had the good luck to have Roux tell me about Pasteur, the man, while we were visiting his tomb, which, as you may know, is situated in the Institute Pasteur, in the rue Dutot. Also, Roux introduced me to Professor Costantin, who was at that time professor of cryptogamic botany at the Ecole Normale Supérieur. The striking likeness of this man to Pasteur is uncanny, and to see Costantin at work in the very laboratory in which Pasteur had spent so many of his days also at work on the yeasts was a strange experience. M. Costantin told me

too of Pasteur, whom he knew well and from whom he had drawn inspiration for his own work.

It seems that Pasteur was essentially a human type of man, hating illness and disease and dreading contact with pain and suffering, not only in human beings, but even in animals. Roux told me the story of the first trepanning of a dog's skull, when Pasteur was experimenting with the rabies. The story is elaborated by Descour in his life of Pasteur and is also commented upon by his son-in-law, René Villery-Radot. The gist of the matter was that it was only when Pasteur was away from the laboratory that they would dare operate upon the animal, Pasteur being himself so susceptible to pain in living creatures that the operation had to be done in his absence. Upon his return, the first question, "How the poor dog must have suffered!" and Roux says that he himself immediately went to the basement to fetch the dog so that Pasteur might see the animal lively and in good condition. Pasteur said, "I am so glad," and patted the animal.

This human, sensitive side of Pasteur's life has been beautifully dwelt upon by a popular playwright in Paris, Sacha Guitry, who based an interesting play upon the human as well as tragic side of Pasteur. His temerity in the administration of prophylaxis of rabies is the keynote upon which a great dramatic moment is built in the play. It was just a year after the great war that I saw this play, acted by a famous actor, who was the father of the playwright, Lucien Guitry. This artist demonstrated the human tenderness in the character of Pasteur. I was deeply impressed by an emotional scene where Pasteur hesitates to give the injection of rabbit-cord virus against rabies. It was dramatic in the sense of the theatre, and Guitry, the elder, being a great artist, realized how dramatic it was to the world—it was a world drama. This act not only saved one child's life but the lives of thousands since, and will effect and even banish all death by rabies.

It is said that circumstances, opportunity, environment, social and political position often make great men. Certainly this dictum holds not at all in the life and development of Pasteur. It comes as a surprise to most of us to learn that he was not a physician, that he knew nothing whatever of medicine, that he was a chemist. To show what he has done for medicine is a

gigantic task, because what he accomplished in his life was the work of a gigantic intellect, developed by his own innate powers, his deep spiritual faith and love of truth. From the beginning there is no evidence of genius—a mediocre student, a man who never shown from without. His mind worked only in one way, for truth, and it is this marvelous ability to throw aside all theory and speculation, this ability to keep to facts and facts alone that makes for any great man in science.

For instance, to show Pasteur's simplicity: In August, 1881, he was entrusted with the official representation of France at an international Medical Congress which was to be held in London. The Prince of Wales presided at the opening ceremony. When Pasteur entered the big St. James' Hall, and was conducted by one of the committee to the platform, there was great applause mingled with vivas and hurrahs. Pasteur said rather nervously to his son-in-law: "No doubt that is the Prince of Wales arriving. I ought to have come earlier." The President of the Congress, Sir James Paget, replied: "But it is you whom they are all cheering!"

In 1892 the Sorbonne gave a great international reception to celebrate Pasteur's 70th birthday. Many eminent men of all countries were present, among them the great English surgeon, Lister. After a magnificent compliment to Pasteur on his work against Rabies, Lister finally said: "M. Pasteur, infectious diseases constitute, as you know, the greater number of the maladies to which the human race is subject. You can therefore well understand why it is that on this impressive occasion medicine and surgery hasten to bring you the profound homage of their admiration and gratitude."

"This speech provoked an indescribable manifestation of enthusiasm. Pasteur rose to embrace Lister," says Descour. "The sight of these two men clasped in each other's arms seemed a living symbol of the fraternity of science in the alleviation of the sufferings of humanity." It is said that Pasteur was unable to speak in reply to Lister, so overcome was he, and his son read the speech of thanks. Again the simplicity of greatness is evident in this extraordinary, this superlative French scientist.

Twenty years before, Lister had written to Pasteur thanking him for his work on the lactic acid bacillus, and in closing his letter, he said: "Allow me to take this opportunity of thanking

you most heartily for having shown me, by your investigations, the truth of the germ theory of putrefaction, and for having thus acquainted me with the one principle which can lead the antiseptic system to final success. If you should ever come to Edinburgh, you would, I believe, be rewarded by seeing in our hospital how greatly the human race has benefitted by your work. Need I add that it would give me the greatest satisfaction to show you what surgery owes to you?"

Some men have received at birth such magnificent and exceptional gifts that they form only discouraging examples to the rest of mankind. Who would dare to take a Pascal or a Newton as model? Pasteur is more approachable. He was, to begin with, much like the rest of us. His genius, the fruit of clear reasoning and persevering work, enlightens without dazzling us. This makes his history more interesting.

In the rue d'Ulm there is a tablet that I passed daily on my way from my rooms to the laboratory. The tablet is on the little one-story house that was Pasteur's laboratory before he went into the larger one in which Costantin and I worked. Alas! Costantin also is dead. Upon this tablet is inscribed the following:

HERE WAS
THE LABORATORY
OF
PASTEUR.
1857
Fermentations
1860
Spontaneous generation
1865
Diseases of wine and beer
1868
Diseases of silk worms
1881
Virus and vaccines
1885
Prophylaxis against rabies.

We see, surveying the years 1857-1885 what an enormous field Pasteur covered. It was from the study of tartaric acid and paratartaric acid that the development began. A fact existed:

the deflection of light by one and not the other, and only theories *why* were to be found. It was the crystals that differed. This dissymmetry of crystals was a great fact. From this purely chemical fact he developed an inquiry into other more erudite problems that are not for us to go into now, but from his work was evolved the basis of syntheses and hence modern synthetic chemistry. From this study his work led him to fermentations, and their study brought forth the first demonstration as causative factors of what he called microbes—now known as microorganisms; his work on the disproval of spontaneous generation and on putrefaction brought him to definite bacteria, such as the vibrion sceptique, which we now know as the bacillus of malignant oedema. His subsequent study of the diseases of wines and beer and the diseases of silk worms led him to the study of chicken cholera, and it was in this work on chicken cholera that he formulated his greatest achievement, the attenuated vaccine virus. In this seemingly unimportant disease Pasteur made the most wonderful of his discoveries—vaccination; that cultures might be attenuated, and instead of curing the disease it became possible to immunize animals against disease entirely. Indeed, experiments with the viruses of anthrax, chicken cholera and swine measles (rouget des pores) brought out the principle that the pathogenic properties of a virus can be attenuated or heightened by successive passages through the bodies of appropriate animals and led to one of the most luminous thoughts in the history of medicine—that the origin and extinction of infectious disease in the past (syphilis, for instance) may simply be due to the strengthening or weakening of its virus by external conditions.

Roux in speaking of Pasteur's work of the attenuation of virus, said that Pasteur had obtained varieties of virus as a gardener raises varieties of flowers. One of the essential characteristics of virulent diseases is the absence of recurrence. It is exceptional to have small pox, scarlet fever, or typhoid twice. Chicken cholera, which cannot develop twice in the same animal, is therefore a virulent disease against which Pasteur obtained protection by artificial immunization. Roux said that Pasteur must have trembled with joy when he saw his dream of immunization realized.

Later Pasteur was drawn from his work with animals and insects, hogs, chickens, sheep, silk worms, etc., into the actual field of medicine. He was not only admitted as a member of the Académie Française for his work, but was made a member of the medical world of science after having described and discovered the staphylococcus in the pus of boils which he found on the neck of one of his assistants. He called this the "microbe en amas de grains." Also the streptococcus which he discovered in the purulent discharges of the uterus and vagina of women in the maternity wards in the Paris hospitals. This he called the "microbe en chaplets de grains." Roux told me that it was with the greatest disgust and with a shivering almost that he entered the wards to make these smears. Roux writes: "Chamberlain and I assisted him in his studies. It was to the Cochin or to the Maternity Hospital that we most often went, carrying our culture tubes and sterilized pippettes into the wards or to the operating theatre. It is difficult to realize the repulsion that Pasteur had to overcome in order to visit the sick and assist at postmortems. His was such an extreme sensibility that he suffered both mentally and physically in witnessing the pain of others; cut of the bistoury which opened an abscess made him shudder as if he had himself felt it. The sight of a corpse and the melancholy work of autopsy revolted him. How often did we see him obliged to leave the hospital theatre, overcome! But his love of science and thirst for truth were too strong—he came back next day." It is a striking picture of the scientist overcoming his innate loathing for sickness all for the reason that he felt sure the etiologic factor was to be found. If Pasteur had done nothing more in the world than this it would be a lesson for all of us in medicine to overcome our own weaknesses for the sake of truth and light in science.

We must remember that Pasteur was not a physician, and what is more, his greatest work for medicine was all done after a severe illness following apoplexy. Indeed, for the last twenty years of his life he was handicapped by semi-paralysis of his left hand.

By gradual but always logical sequence then Pasteur entered the field of human pathology and in medical meetings his words of wisdom were attentively listened to. Descour writes: "He followed with keen interest the discussion on puerperal septi-

caemia which had begun at the Academy of Medicine. * * * * The state of affairs in large towns was very different from that of country towns. About 1850, a mortality was recorded in Paris of one woman in every two hundred newly confined, and the number was ten times larger in hospitals, although attended by doctors of the highest standing; and sometimes terrible epidemics of puerperal fever occurred which made it necessary to close the maternity wards. At the Paris Maternity Hospital one case was lost out of every four confinements.

"The same causes were cited to explain these disasters as were invariably put forward in all epidemics: overcrowding, infection and miasmas. Pasteur could not be satisfied with such trivialties and said so plainly to his colleagues of the Academy.

"He said: 'In my opinion no such thing exists as a healthy or an epidemic state. The facts hidden beneath the expressions *infected countries, epidemic neighborhoods,* correspond to a varying abundance of germs, and to hygienic conditions, constitutional or otherwise, which are favorable to their development.' * * * * 'I venture to advise all young doctors to read very carefully my studies of silk worms; they will find there the first account of a disease, at the same time hereditary and contagious followed out not only as regards its characteristics and the lesions it causes, but also in the properties and development of living microscopic contagion.'

"Roux has told about the results of his master's researches: 'In puerperal infections the pus from the uterus, that in the peritoneum and the blood, contain a micro-organism which has the appearance of strings of beads. This appearance is particularly noticeable in cultures. Pasteur had no hesitation in declaring this microscopic organism to be the commonest cause of infection in women after delivery.

" 'One day, during a discussion on puerperal fever, one of those colleagues whose utterances received the greatest attention was discoursing eloquently on the causes of epidemics in maternity hospitals. Pasteur interrupted him from his seat: "What causes epidemics is nothing of the sort; it is the doctor and his assistants who carry microbes from a sick woman to a healthy one!" And when the speaker answered that he feared that this microbe would never be discovered, Pasteur rushed up to the blackboard and drew the organism in chains, saying, "Look!

that is what it is like!" His conviction was so strong that he could not help expressing it forcibly.

" 'One cannot today imagine the state of surprise and even stupefaction into which doctors and students were thrown when, with a simplicity and assurance which seems astonishing in one who was entering a maternity hospital for the first time, Pasteur criticised the methods of dressing, and declared that all the materials ought to be sterilized in an oven. Furthermore, he claimed that he could, by examining the lochia, point out those women who would have a rise of temperature, and stated that in a woman heavily infected he could demonstrate the microbe in blood from the finger. Pasteur did what he said he could do. In spite of the tyranny of medical training which controlled original thought at that time, some students were carried away and visited the laboratory to have a closer view of methods which made such accurate diagnosis and such sure prognostication possible.

" 'Thanks to the methods inispired by Pasteur's work, maternity hospitals are no longer "ante chambers of death," and epidemics of puerperal fever are found there no more'."

Pasteur described not only micro-organism as etiologic factor of infectious disease, but also was the first to explain the mode of entry of the micro-organism, the increase of virulence by passage through various animals and hence the fact of susceptibility and immunity of individuals to specific infections.

It is not my province to go further into Pasteur's life. I was asked to say what he did for medicine and it seems to me that these are the facts that stand forth:

Pasteur is the father of synthetic chemistry and hence the beginning of modern pharmaceutical preparations which are of inestimable therapeutic value to medicine. He is the starting point of microscopic analysis of fluids and hence the originator of the modern clinical laboratory. He is the father of bacteriology—more need not be said to medical men. He is the first to actually sterilize fluids and hence is the father of modern infant feeding (Pasteurization of milk). He is the first to deal with the actual etiologic factor of disease and hence is the father of prophylaxis by vaccines. He brought to medicine the fact of an exact etiology of infectious diseases and with the fact of etiology a new therapeutics; we no longer flounder and

treat symptoms. Attack the etiologic factor and destroy it, the rest is nature's work. More than this, and even greater, is the power to attack the etiologic factor before the illness occurs. Prophylaxis dates from Pasteur—the ounce of prevention being proverbially worth many million pounds of cure. Not only did he save France's industries in one year her whole indemnity that she paid to Germany in 1872, but to humanity the saving of life by prophylaxis is incalcuable, indeed the mind is not able to grasp at one thought the enormous value of this one man's work to medical science. And lastly, Pasteur is the man who eradicated the dread disease of rabies or hydrophobia.

Paul Bert, in addressing the National Assembly of the French Government when asking for a pension for Pasteur, said: "Pasteur's discoveries, after shedding new light into the obscure question of fermentation and on the way in which micro-organisms appear, have revolutionized certain branches of industry, agriculture and pathology. One is filled with admiration at the sight of so many different results emerging, by the linking together of facts followed step by step and leaving nothing to hypothesis, from theoretical studies on the way in which tartaric acid deviates polarized light. Never has the famous saying, 'Genius is patience' received such striking confirmation."

No more fitting closing to this slight contribution of admiration for the genius of Pasteur can I find than the words of Sir William Osler in his preface to Vallery-Radot's life of this great Frenchman. Osler says:

"The future belongs to science. More and more she will control the destinies of nations. Already she has them in her crucible and on her balances. In her new mission to humanity she preaches a new gospel. In her nineteenth century renaissance she has had great apostles. Darwin, for example, whose gifts of head and heart were of equal measure; but after re-reading for the third or fourth time the life of Louis Pasteur, I am of the opinioin, expressed recently by the anonymous writer of a beautiful tribute to the Spectator, 'that he was the most perfect man who ever entered the kingdom of science'."

PASTEUR'S INFLUENCE ON HYGIENE.*

By W. H. SEEMAN, M.D.

The honor of a place on tonight's program carries with it a sense of inability to do justice to the theme. To attempt to delineate the influence on Hygiene of Louis Pasteur would be an interminable and at best incomplete effort. We feel like pigmies admiring the pyramids or like schoolboys analyzing the descent of man. We can, like them, hope by earnest endeavor to do the best we are able; in this instance to do our duty by rendering our full homage at the shrine of the patient genius, whose humility was so pure and noble, that it has become a magnificent light shining through the century, and rendering more scintillating and brilliant the accomplishments of the most substantial crystal gazer that the world has ever known.

Pasteur, educated first at the "Ecole Primaire," attached to the college at Arbois, had no particular incentive to his great ambition for study and mental advancement. It would seem, however, that his serious minded attention to Dr. Dumont and Bousson de Mairet, both honored and frequent visitors at his father's home, did much, in addition to his father's ribbon of the Legion, to kindle the spark and fan the flame of the budding genius. This flame, it may be said, though steady, did not in its early stages show much brightness and it is to the careful shielding and encouragement given by Romanet, his teacher, that the world owes thanks for the brilliant sun which finally burst forth, and which continues to illuminate and warm the path of science.

You have heard how Pasteur's ambition to be educated at the Ecole Normale, at Paris, was first delayed by various causes, interrupted by home sickness, and, finally, achieved by dogged perserverance; how his marked faculty for observation and research was first demonstrated in the preparation of phosphorus from bone ash and later in the crystal study of tartaric acid and the tartrates.

Following his communications on fermentation in 1857-1858, the first real influence exerted by Pasteur on the science of Hygiene was brought about, by his studies on Spontaneous Generation. The Cardinal Polignac, Father Needham, the Abbé Spallanzini and even Voltaire had been embroigled in an active,

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and even heated, discussion of this subject. Apropos of this subject in 1858, M. Pouchet, the director of the Natural History Museum at Rouen, sent to the Academy a "Note on Vegetable and Animal Proto-organisms, spontaneously generated in Artificial Air and in Oxygen Gas." In it, he maintained the doctrine of Spontaneous Generation. This communication came into the hands of Pasteur and resulted finally in his demonstration that germs exist in the air, that if they are excluded, even in the most putrescible liquids, no putrefaction takes place.

After several years of study and polemical communications with his adversaries, at the Sorbonne in April, 1864, Pasteur delivered his famous lecture before a large and most representative audience, when he put the final crushing blow on the theory of spontaneous generation, leaving only a few scattered fragments to be brushed away.

After describing his experiments, by which sterilized liquids, kept from the contaminating influence of atmospheric germs, had failed to show evidences of life, whereas the controls showed bacterial growth, as usual, he delivered this powerful peroration: "And, therefore, gentlemen, I could point to that liquid and say to you, I have taken my drop of water from the immensity of creation, and I have taken it full of the elements appropriated to the development of inferior beings. And I wait, I watch, I question it, begging it to recommence for me the beautiful spectacle of the first creation. But it is dumb, dumb since these experiments were begun several years ago; it is dumb, because I kept it from the only thing man cannot produce, from the germs which float in the air, from life, for life is a germ and a germ is life. Never will the doctrine of spontaneous generation recover from the mortal blow of this simple experiment."

Most of us associate the term Pasteurization with the method of ridding milk of much of its bacterial content by exposing the milk to a temperature of 60°-70° C. for a period of minutes, up to 45, depending on the temperature. It is interesting to note that this method is the direct outgrowth and result of the next work which Pasteur undertook, the heating of wines for a few moments at 50°-60° C. to prevent their spoiling later. The spoiling of course, was due to entrance of atmospheric germs, and Pasteur's discovery made possible the storage and shipment of wines, which, before, had been much interfered with.

Just after Pasteur's election as an associate of the Academy of Medicine, he was called upon to discuss the work of Davaine on Anthrax, a work which was much attacked by certain doctors, who answered the experimental proof with oratorical arguments. Pasteur, in the course of his discussion, made this emphatic statement, "The correlation is certain, indisputable, between the disease and the presence of organisms."

Pasteur was much interested in the prevention of pyogenic infections and to his influence Guerin's use of cotton wool dressings is due. Pasteur, later, on one of his visits, suggested the heating to a very high temperature the cotton wool dressings. To these teachings are due, largely, the evolution of our modern facilities for producing sterile dressings, culture media, liquids, utensils, etc.

The work of Pasteur on the diseases of silk worms, Pebrine and Flachery, and his methods of separating diseased from healthy "seeds," before planting, constitute a brilliant chapter, and a long one, in the life of the scientist, and marked a memorable milestone on the road of progress which has resulted in many valuable agricultural and entomological studies. Incidentally, he discovered, in his studies of Flachery, the presence of spores and determined their superior resistance to destruction and their power to reproduce after a prolonged time.

In his work on chicken cholera the first demonstration of the possibility of attenuating cultures, so that any number of grades of virulence could be produced, took place—and vaccination with artificial test tube culture material, which was capable, on injection, of producing immunity. The term vaccination previously had been used only in connection with small pox vaccination. In his address before the International Medical Congress, in London, August 8th, 1881, Pasteur said he had extended the comprehension of the term vaccination in the hope that science would continue it, as an expression of homage to the great Englishman, Jenner.

The attenuation method was extended to the subject of anthrax, with equally brilliant results, and for forty-one years Charbon vaccine has been of immeasurable benefit to the world; later, similar work was done with rouget or swine erysipelas.

The monumental work which makes Pasteur's name a familiar and respected one through all the world occupied five years,

from the end of 1880 to the middle of 1885. I refer to his work on Rabies. The story of the investigations first with the saliva of rabid dogs and humans, and, later, with the substance of the medulla, the latter of which produced successful experiments, constitutes a romance full of zeal and heroism, well worth recital, if the time would permit. Suffice it to say, that by transference of the virus, from animal to animal, a virus of fixed virulence was obtained, greater, in its potency, than that obtained from the street dogs. This virus subjected to drying in air, in the presence of caustic potash, gradually lost its virulence until, as Pasteur expressed it, at the end of fourteen days, it had become extinguished. He next showed that with dogs inoculated with this material, in doses of gradually increasing virulence, it was possible to reach the point where fixed virus, freshly removed, could be injected, without harm, and the animals would remain protected against rabies.

The first human inoculation after many successful animal experiments was in a little Alsatian boy, whose name has almost become immortal on this account, Joseph Meister. Pasteur after consultation with Vulpion and Grancher, his friends and advisors, proceeded to give the child the set of injections with perfect results. Following this favorable experiment, the patients flocked from everywhere for treatment and the results were almost uniformly favorable, with the result, that since that time thousands have been treated and Pasteur Institutes have multiplied until there are probably over one hundred in the world.

I have endeavored to hastily recall in the limited time allowed the major subjects of the works of Pasteur which have influenced the progress of Hygiene. The work on puerperal septicemia and surgical infection, or hospital miasma, as it was called was of great importance and its influence on hygiene have also been tremendous.

To sum up the influence of Pasteur on Hygiene is a task impossible of accomplishment, for it still goes on. Pasteur's discoveries were great but they were small compared to the establishment of the Pasteur system of discovery. He taught us how to study. Commonplace laboratory procedures of today which are received with indifferent obviousness, are largely the fruits of the labors of Pasteur and his contemporaries and their fol-

lowers. The specific treatment of diseases, the specific vaccinations against disease, the increased knowledge of the pathology of many diseases are to a great extent the result of the work of the Pasteurian school.

It must not be believed that all this fruit of science was gathered without labor and strife. Sickness and misfortune, privations and disappointments, turbulent storms of criticism and opposition punctuated Pasteur's eventful life—and with it all, he remained patient, firm and steadfast, actuated by pure love of science, as he pleaded in an address at Milan, where he expressed his code of action and ideals.

"Let us, he said, therefore strive in the pacific field of science for the pre-eminience of our several countries. Let us strive, for strife is effort, strife is life when progress is its goal.

"He, above the rest,
In shape and gesture proudly eminent,
Stood like a tower."

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*PASTEUR'S CONTRIBUTIONS TO CHEMISTRY.

By HAL WALTERS MOSELY.

We have met on this the one hundredth anniversary of the birth of Louis Pasteur to do honor to one whose achievements exerted a most remarkable influence not only on the science of chemistry, about which I am to speak tonight, but also had its effect in a most remarkable way upon many departments of practical life, particularly in laying a solid foundation of modern medicine.

Pasteur was a trained chemist, and it can be said without contradiction that his success in other scientific fields was due to his careful chemical training. Other sciences up to his time had dealt with superficial description and empty nomenclature largely, and it was Pasteur who brought to them the exact experimental methods and close reasoning of the chemist. Pasteur was an ingenious experimentalist but, unlike many experimenters, he was also possessed of a keen logical mind and an exceptional and vivid imagination. His penetrating insight into the unknown was, among all his fine qualities, probably the most significant. Experiment almost without fail proved his theories.

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Even to this very day, twenty-seven years after his death, very little of Pasteur's work requires revision—a unique record.

Louis Pasteur was born December 27th, 1822, at Dole. Two years afterwards his parents moved to Arbois, where he passed his childhood. He began serious preparation for life at the College of Arbois. This institution, however, proved unsatisfactory to the young student because of the absence of a chair of philosophy. It was in the College of Besancon that he met and studied with M. Darlay, whom he often much embarrassed with pointed questions which the teacher was unequal to answering. After graduating from Besancon he was ambitious for further study and determined to prepare for the Ecole Normale at Paris. This proved a wise choice for the young man, for here he came under the influence of Balard, the discoverer of bromine, and Dumas, the renowned chemist, who was then lecturing at the Sorbonne. Under Balard's instruction he made such decided progress in chemistry that upon graduating he was appointed an assistant to Balard. The Ecole furnished him another inspirational instructor in the person of Delafosse, the eminent crystallographer.

Following his student days he held several important appointments. He was first called to Strassburg and later to Lille as professor of chemistry and Dean of the Faculty of Sciences. It was here that his real study of fermentation began. From this time on, 1854, Pasteur turned his attention more and more from the field of pure chemistry to that of applied chemistry—fermentation studies and biological problems of a chemical nature.

It is perfectly evident from this brief account of the early history of the man that his great interest was in chemistry and its applications. What wonder is it that Pasteur should be considered first of all a chemist! His enthusiasm for chemistry is indicated in a letter to his friend, Chappuis, in which he says: "Why are you not a professor of chemistry or physics? We should work together, and in ten years' time we would revolutionize chemistry. There are wonders hidden in crystallization, and, through it, the innermost construction of substance will one day be revealed. If you come to Strassburg, you *shall* become a chemist; I shall talk to you of nothing but crystals."

Interest in Crystals.

While a student at the Ecole Normale Pasteur had been much impressed by his teacher, M. Delafosse, whose interest in crystal

forms created in the young student such a profound spirit of investigation that upon the first opportunity he set out to repeat in great detail the work of M. de la Provostaye on the crystalline form of the tartrates. What a significant choice! Almost no other field would have proved so fruitful to the youthful investigator. Here it was that his successes began.

CRYSTAL STUDIES BEFORE PASTEUR.

In order to view Pasteur's work in its setting it is necessary to briefly review the work of his predecessors and contemporaries. Very early in the study of crystal form Haüy had introduced the idea that the geometrical form of the crystal was the result of simply piling up "integral crystal molecules" one upon the other, and that the outward crystal form was governed by the form of the single "integral crystal" out of which the whole was built. In other words, geometrical regularity was an evidence of physical and chemical regularity.

This general notion was advanced by the introduction of the principle of isomorphism of Mitscherlich. In this principle we have the notion that chemical molecules of isomorphous substances are of the same type, which was an attempt again to relate crystal form with the constitution of the molecule, a relation more clearly expressed than the work of Haüy permitted.

M. Delafosse, whose pupil Pasteur became, added to the study the conception of irregularity among crystals and showed that the beautiful laws of form of Haüy were not always followed. While his work offered no real advance in clearing up the difficulties of crystalline form, yet it emphasized to the mind the fact that the form of the "integral molecule" of the crystal is not so closely bound up with the crystal itself as Haüy had taught.

Double refraction of crystals was known to Newton and Huygens, and the phenomenon of polarization of light by crystals was discovered by Malus in 1808. Arago and Biot, pupils of Malus, extended the work of their master, and in 1815 Biot made the significant discovery that natural organic substances such as sugar, camphor, tartaric acid, oil of turpentine, etc., possess the power of rotating the plane of polarized light either when the substances are liquid or are in solution. As a result of his studies Biot pointed out the rather significant fact that these substances even after having lost their crystalline form were optically active, while other substances known to be optically active

as crystals completely lost the property when the crystal was destroyed. As a conclusion of this discovery he pointed out the fact that rotatory power in organic substance must be due to the structure still remaining, namely, the molecule itself. As this discussion proceeds one will readily see how significant Biot's observation was. It forced the physical phenomenon of polarization into the very face of the chemist who now *must* take cognizance of it.

About this time Biot communicated to the Academy of Sciences a note by Mitscherlich wherein was contained the extremely interesting fact that the paratartrate and the tartrate of soda and ammonia were exacly alike in all physical properties save in the fact that the paratrate exhibited no rotation to polarized light while the tartrate was active.

There can be no question that the work of Biot and this interesting observation of Mitscherlich were the deciding factors in causing Pasteur to undertake his first piece of independent research—the crystal structure of the tartrates.

Pasteur and the Tartrates.

At the outset a very striking thing occurred. On the tartrate crystals Pasteur found small facets which had not been described before. Even the careful Delafosse had overlooked these slight irregularities in crystal form. But what of these facets? Why were they of any importance? It was in this fact: namely, that quartz crystals had been shown by Haüy to have right and left-handed facets, and that the position of the facets according to Sir John Herschel, determined the nature of the rotation. Only a step now for the enthusiastic Pasteur. Rotatory effect was due to the crystalline form. As he continued the work he found hemihedral facets, as these facets were called, on all the 19 different tartrates examined. The further fact was shown that these tartrates gave optical rotation coinciding with their hemihedrism. "This correllation related them to quartz but had a deeper meaning, for here it could be no longer a question of the arrangement of the molecules in the crystals, but of arrangement of the atoms in the molecule." Pasteur was too well taught by Delafosse not to have laid strong hold upon this discovery of new facets on crystals whose solutions were active as a confirmation of the idea of a fundamental connection between hemihedrism and rotatory power.

THE PARATARTRATES.

Recalling the observation of Mitscherlich on the difference between the paratartrates and the tartrates of soda and ammonia in regard to optical rotation, Pasteur naturally examined the paratartrate in some detail. Here he found the same facets, but much to his surprise they occurred differently placed on some of the crystals, for some were turned toward the left, others toward the right. What could have been more natural for Pasteur than to separate these one from the other and test their solutions polarimetrically? A dramatic situation resulted. The left-handed crystals produced left-handed rotation and the right-handed were rotatory to the right. He had thus succeeded in resolving paratartaric acid into active enantimorphs. These results were so startling that no one believed them. When they were communicated to Biot he refused to accept them until the experiments were performed under his direction and before his eyes. This Pasteur agreed to and his experiments were again successful. Biot was so moved by the result that he took the young investigator by the arm and said: "My dear child, I have loved science so much throughout my life that this makes my heart throb."

Instead of two tartaric acids there were now three. The dextro-acid, the hitherto unknown levo-acid, and the racemic acid. It was further found that when concentrated solutions of the dextro- and levo-acid were mixed in equal proportions there was an evolution of heat, and the crystals produced were identical with the original racemic form and also identical with those crystals produced at the factory of Thann, where they were first discovered and thought to be oxalic acid.

Pasteur was always given to co-ordinating and summarizing his work. Said he: (1) "When the elementary atoms of organic products are grouped asymmetrically, the crystalline form of the substance manifests the molecular asymmetry in non-superposable hemihedry. The cause of hemihedry is thus recognized. (2) The existence of the same molecular asymmetry betrays itself, in addition by the optical rotatory property. The cause of rotatory polarization is likewise determined. (3) When the non-superposable molecular asymmetry is realized in opposite senses, as happened in the right and left tartaric acids and all their derivatives, the chemical properties of these identical and inverse substances are rigorously the same."

The following statement coupled with the above may be said to form the very foundation of stereochemistry: "All bodies fall into two great classes, bodies with superposable images and bodies with non-superposable images,—bodies with asymmetric atomic arrangement and those with homohedral atomic arrangement."

Resolution of Racemoids.

Having found that paratartaric acid was resolvable into active forms it was only natural for Pasteur to inquire whether other methods than the mechanical separation of right and left crystals might not be employed? Three other highly significant methods were developed. First, separation by crystallization; second, separation by the use of a suitable ferment; third, separation by the use of other optically active bodies.

The first method consisted in the production of crystallization from a saturated solution by seeding out the solution with crystals whose form the precipitate should take. This method has proved successful in resolving lactic acid into active forms (Purdie, Trans. L. C. S., 1893, 63), and Emile Fischer used it in resolving d-l-gluconic lactones into active forms (Ber. 1892, 25).

Pasteur came upon the second method as a result of his observation that under certain conditions tartrate solutions fermented. Why not try the effect of the fermentation on the racemic acid? thought he. Interestingly enough he found that certain ferments, particularly Penicillium glaucum, when allowed to grow in the racemate solution destroyed the dextro isomer and left the levo-isomer unattacked. This biochemical method has proved of inestimable value in the separation of isomerides. Many different organisms have been employed upon a large number of substances with great success.

The third method developed has proved its usefulness in many important directions, particularly in Emile Fischer's work on the synthesis of the sugars, and in Ladenburg's work on the synthesis of the natural alkaloids. It was found that when certain optically active substances, e. g., (1) quinine, strychnine, brucine, (2) cinconine, cinchonidine, morphine, etc., were brought into solution with the racemic form of the substance there were produced compounds with the alkaloids of sufficiently different solubility to result in a complete separation by crystallization. After precipitation of the dextro or levo form the

active form was recovered by the destruction of the alkaloid. This method has proved singularly significant in many very important syntheses.

TRANSFORMATION OF TARTARIC ACIDS.

Upon heating dextro-tartaric acid either with water or in the form of its cinchonine salt he found that the dextro acid was partially transformed into the levo acid some racemic acid, and most important of all, into an iniactive tartaric acid which was not resolvable into racemoids by any method. In this he discovered a fourth kind of acid which is now familiarly called meso-tartaric acid. The significance of this discovery is made apparent by merely mentioning the fact that E. Fischer applied it in his sugar researches with brilliant success.

MALIC AND ASPARTIC ACIDS.

Pasteur did not confine himself alone to the optical properties of the tartaric acids but directed his attention toward other active substances, e. g., malic acid and its derivatives, and aspartic acid. Though not as successful in this field as he had been with the tartaric acids, some rather instructive disclosures were made in spite of the difficulties. M. Dessaignes was reported to have prepared aspartic acid by heating the ammonium salt of fumaric and maleic acids. Such a preparation as this was of course impossible to Pasteur. He was too firmly grounded in the notion that molecular asymmetry manifested in the optical rotation of substances was produced only by vital agencies to have accepted an aspartic acid from any other than the natural source. Upon careful study he proved that the product while identical in other respects with the natural acid was in truth inactive. He then converted the new aspartic acid into malic acid by the method of Piria and likewise proved this acid to be inactive. This proved to him the possibility of a fourth form of malic acid which was not racemic, neither dextro nor levo but, as he expressed it, "an asymmetric body so twisted that it becomes superposable on its mirror image." Of course Pasteur was wrong in assuming a fourth class here, still the idea of a possible fourth form due to some sort of internal compensation was a most important addition to the general theory of asymmetric compounds. So sure was he of the fourth type of substances that he assumed it for all asymmetric compounds, but of course he was in error, for we know that only those sub-

stances whose molecules can be divided into symmetrical halves by a suitable stereometric arrangement of the groups yield a possible fourth form.

Fermentation Studies.

When Pasteur began his study of alcoholic fermentation it was the generally accepted belief that such a process was the result of dead yeast undergoing "post-mortem decomposition." Such a conception could have no place with Pasteur for he had seen how asymmetric bodies were formed by vital processes and that fermentations were often associated with asymmetric bodies. Fermentation, therefore, must be the result of a vital process and not of the putrescence of a decaying body. He proved his point, as we so well know now. In this connection we owe to Pasteur the honor of being the first to attack scientifically those problems in which both the chemical and biological aspects received their due share of consideration. He bridged the gulf between chemistry and biology, and made progress because he recognized the value of chemistry in the solution of biological problems. It was during his fermentation studies that he made the discovery of the possibility of life without airanaerobic life.

Following the studies on alcoholic fermentation he began to make investigations on the vinegar process. He showed that the conversion of wine into vinegar is the work of a rod-like organism, which he called mycoderma aceti, and that in order for the process to be successful the mode of life of the organism must be understood. So thoroughly did he work out the details of acetic fermentation that he proved a great benefactor to the vinegar industries and in so doing convinced his opponents of the correctness of his views.

Conclusion.

Louis Pasteur, the French chemist, has become the heritage of the scientiific world and his work is his greatest monument. What more glorious and enduring monument could a scientist leave to commemorate his name than Pasteur has left: the foundation of the science of stereochemistry on which our modern organic chemistry rests, the groundwork of fermentation processes so important industrially today, the basis of modern bacteriology and pathology, the cornerstone of modern surgery, the veritable keystone to the arch of immunity from disease! Hu-

manity owes more than it can ever repay to this matchless man of intense passion and tremendous enthusiasm for constructive scientific research.

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*THE INFLUENCE OF PASTEUR ON OBSTETRICS AND GYNECOLOGY.

By E. L. KING, M.D., New Orleans.

Obstetrics, like the poor, we have had always with us, but gynecology is, relatively speaking, a new specialty. The development of the latter and of the surgical aspects of the former were made possible by the advent of antisepsis, succeeded in turn by asepsis. Anesthesia has, of course, contributed tremendously to this advancement.

Previous to the labors of Pasteur and of Lister, operative obstetrics had been limited almost exclusively to vaginal procedures. Abdominal Caesarean section, for example, was performed as a last resort on the most desperate cases, and the majority of the women died of infection or of hemorrhage, the lowest recorded mortality rate being 52.5% (Newell). Budin (quoted by Newell) stated that not a single successful abdominal Caesarean section was performed in Paris between the years 1787 and 1876. Harris, in 1878, stated that the patient's chances were better when she operated upon herself or when the uterus was rippd open by the horn of a bull than when she was operated upon by a surgeon. He collected nine such cases, with five

cures, while during the same period eleven Caesarean sections were performed in New York City, with only one recovery. Parenthetically, we may note that Dr. Prevost, of Donaldsonville, La., reported four sections in the early thirties, with three mothers recovering. Other major obstetrical procedures, such as symphysiotomy, also fell into disrepute due to the bad results obtained.

It is well known that the mortality and morbidity rates due to puerperal infection in non-operative cases were high in pre-antiseptic days, and it was often necessary to close maternity wards for weeks in order to eradicate the infection. In 1842, the mortality in Vienna varied from 18 to 31% (DeLee). Many observers had suggested the contagiousness of puerperal fever, even as far back as Levret, of Paris, who, in 1770, inquired whether contagion could not be carried in the blood decomposing in the meshes of the leather used to cover Smellie's forceps. In 1843, Oliver Wendell Holmes read a paper on "The Contagiousness of Puerperal Fever," inspired by the death of a physician from septicemia, which was due to accidental inoculation during an autopsy. He proved his point, but was violently opposed, notably by the obstetricians, Meigs and Hodge, and it does not appear that he was sufficiently pugnacious to push the matter to its final conclusion. He did, however, publish another paper along the same lines in 1855.

But Semmelweiss, of Vienna, conceived the same idea independently, and doggedly kept up the agitation which he started in 1847. The obstetrical clinic with which he was connected had two divisions in its indoor service, one for the instruction of midwives, in which the mortality from puerperal sepsis was 2.7%, and one for the training of medical students, with a mortality from infection of 11.4%. The midwives taunted the students regarding this notorious discrepancy, and the patients would beg to be allowed to go home, when they learned that they had been assigned to the doctors' clinic. Semmelweiss studied the problem from many angles, noting among other things, that very few patients delivered at home or in non-teaching maternity hospitals died of infection. He also observed that the students would assist at autopsies, and would then go to the maternity wards to examine and deliver patients. His friend, Prof. Kolletschka, died of infection due to a wound sustained at autop-

sy on a case of puerperal fever, and the necropsy on this friend revealed lesions practically identical with those found in patients dying of puerperal infection. These facts gave him the key, and he reasoned that the hands carried particles of decomposed matter from the cadavers to the obstetrical cases. He instituted the washing of hands and the cleaning of finger nails before delivery, using a chlorine preparation, and in 1848 the mortality from infection in the doctors' clinic fell to 1.27%. Semmelweiss also noted that pus from infected puerperal women was fatal to puerperal animals. He claimed that the infectious material could be planted in the genitalia by anything, *e. g.*, hands, instruments, etc., which came in contact with the organs, and that the same thing occurred in surgical cases. The surgeons, as well as his other confreres, however, did not accept his teachings, and it was only after Pasteur had begun his bacteriological researches, and the results had been applied to surgery by Lister, that the value of the pioneer work of Semmelweiss was recognized.

Turning to gynecology, we find that, aside from the occasional exploit of a daring pioneer, such as Ephriam McDowell, practically no gynecological operations were performed in pre-antiseptic days, except the infrequent tapping of an ovarian cyst. Sims, of course, is recognized as the father of gynecology; his fame was based first of all upon his work on vesico-vaginal fistula, and was later amplified and magnified by his abdominal work. How recent has been the development of this specialty is attested by the fact that Sims found it worth while to write an epoch-making paper on "The Careful Aseptic Invasion of the Peritoneal Cavity for the Arrest of Hemorrhage, the Suture of Intestinal Wounds, and the Cleaning of the Peritoneal Cavity, and for All Intraperitoneal Conditions" in 1881, two years prior to his death. He was followed by his great pupil, Emmett, and by a host of others too numerous to mention, who first devoted themselves almost exclusively to plastic work. The later disciples, however, due to the growing safety of abdominal invasion, have gone aside more and more into this field, so much so that Dudley, in his presidential address before the American Gynecological Society in 1905, felt impelled to call his confreres back to the field of work in which the gynecologist is pre-eminent, namely, plastic surgery on the external genitalia.

But what has all this to do with Pasteur? As has been related by the previous speakers, Pasteur's work on the fermentation of wine and his studies of the disease of silkworms called the "pébrine," laid the foundation for the development of modern bacteriology. This development, of course, was brought about in no small degree by Pasteur's further work on the communicable diseases of the higher animals, and his identification and cultivation of the specific micro-organism of each. Reasoning from his studies on fermentation Pasteur concluded that wound infection was due to contamination from micro-organisms contained in the air. Lister, who had given much thought to this problem of wound infection, eagerly adopted Pasteur's views, and began the use of his famous carbolic acid spray while operating, and also employed an occlusive carbolic acid paste for the treatment of compound fractures. Antisepsis, and later asepsis, rapidly developed, and upon these have depended practically all the advances made in surgery and the allied branches of medicine since that day.

Obstetrics and gynecology, being essentially surgicial, have naturally developed to their present high plane due to this fundamental work of Pasteur. We no longer regard puerperal infection as a mystery, but know it to be wound infection, practically always introduced from without, and its prevention is accomplished by the employment of the methods originally advocated by Semmelweiss. He had the right idea, but the final elucidation of the cause of the infection was arrived at only after Pasteur's painstaking researches. We have learned how to invade the pelvic cavity from above, as well as how *not* to invade it at times, realizing that the pelvic peritoneum has wonderful powers of self-protection, as exemplified by its reaction to, and its walling off of, infection.

To the appreciation of these facts countless women owe their lives, and thus it will be for countless years in the future. Little did Pasteur dream of the results of his work, as he labored over the diseases of wine and beer, over the maladies of the silkworm, and troubled his soul with the mysteries of chicken cholera!

*A SAFE AND PRACTICAL METHOD OF ADMINISTERING SCOPOLAMIN-MORPHIN ANESTHESIA IN OBSTETRICS.

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In the past fifteen years a voluminous literature has been put out dealing with the special and peculiar action of scopolamin-morphin anesthesia in producing amnesia and analgesia. The Freiburg method of administration has been so extensively published that when scopolamin-morphin is used in obstetrics, it is taken for granted that this method is the one employed. In spite of this publicity, up to the present time, no degree of popularity can be claimed for scopolamin-morphin anesthesia. On the contrary, it seems to have attracted attention only to have increased prejudice against it. An explanation for this attitude may be that the report of those who have given this anesthetic a trial were based on too small a number of cases, often less than 100 and that no method has been used other than that of Koenig and Gauss, a method known to require special and great attention and skill on the part of the obstetrician.

For fear of being misunderstood, let it be said at the onset that the concern of this paper is not to discredit the work of the great Freiburg obstetrician, nor to compare the amnesic or analgesic properties of scopolamin with other anesthetics. The sole purpose of this report is to draw the attention of the members of the obstetrical profession to a method for administering scopolamin-morphin anesthesia which has stood a successful eight years' trial, to present statistical evidence of its safety for both the mother and the baby, and to show the practicability of its administration.

This method, which may be called that of a fixed dosage may be formulated under three heads: Putting the patient under anesthesia, keeping the patient under anesthesia, managment of the patient at the time of delivery.

Putting the patient under anesthesia is accomplished by administering at half-hour intervals three 1/100th grain doses of scopolamin hydrobromate hypodermically, one-eighth grain of morphin being given with the first dose only.

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*Read Before a Special Meeting of the Orleans Parish Medical Society, Held November 10th, 1922.

The patient is kept under the anesthetic by continuing to give 1/100 grain of scopolamin hydrobromate every two hours until delivery is complete.

The patient is managed during delivery by securing the knees in a Bierhalder leg holder, provided with leather straps so arranged that two straps may be securely fastened above and two below the knee. Leather restraint cuffs are applied to the wrists and are secured by strong bandages to the posts at the head of the bed, allowing sufficient length for all movements except extension below the waist-line, thus preventing any possibility of contaminating or disarranging the sterile dressings.

This method of fixed dosage grew out of and was based on certain observations found by experience to be common to the majority of patients.

First, when patients are questioned after delivery as to the number of hypodermic injections they have had, 75 per cent will give as an answer two, the other 25 per cent will give as an answer three. Those who replied two are the ones who are more than those who replied three are the ones who are less susceptible to the scopolamin-morphin anesthesia. It is not possible, however, and also of no practical importance to ascertain this knowledge before the anesthesia is started. Therefore, all pregnant patients are given the three initial doses in order to produce with certainty the desired state of anesthesia.

Second, if repeated doses of scopolamin hydrobromate are administered to a patient without an accompanying dose of morphin with the first dose of scopolamin, the patient will suffer with terrible delusions and hallucinations of ridicule from those around her, of brutal abuse from hideous-appearing men, or from being covered with bugs of various kinds. The administration of 1/8 grain of morphin with this first dose of scopolamin is sufficient to prevent these hallucinations. A larger dose of morphin is not necessary, nor is it necessary or advisable to repeat the morphin during the anesthesia.

Third, the action of scopolamin is relatively evanescent, one to four hours sufficing in all cases for the patient to regain her normal state if the drug is discontinued. Patients with rapid elimination, especially those who have been having baths or other eliminating treatment, may regain the normal state in an hour after the drug has been administered. Patients who are

toxic or who eliminate slowly may not regain the normal state for four hours. Ninety per cent of patients, however, will eliminate the scopolamin in about three hours, so that perfect analgesia and amnesia may be maintained for any reasonable length of time by repeating the dose of scopolamin every two hours after the patient is once under the anesthetic.

Fourth, efficient and harmless restraint at the time of delivery makes it possible and practical for a physician, single-handed, to manage any delivery without interference with the aseptic technic. After a large experience with scopolamin-morphin ansthesia, this becomes of less, but by no means of no importance.

Long labors or complications due to abnormality require special experience, not only for the conduct of the labor, but for the management of the anesthetic as well. Some suggestions may be given as aids to the safe conduct of the anesthetic. (*a*) Do not feed the patient while under the scopolamin-morphin anesthesia, because she will usually retain nothing except water. (*b*) Do not allow her to have visitors or any attention while the first three doses are being given, but secure as much quiet and darkness as possiblee. After the first three doses, noise and light do not seem to annoy the patient. (*c*) If the scopolamin is given as soon as labor begins, the patient will go to sleep and sleep soundly until the cervix is one-half dilated, from which time on to delivery, she becomes more easily aroused and occasionally seems quite wakeful or even excited. (*d*) If the scopolamin is not given until the patient is quite advanced in labor, or if the labor is ushered in with especially vigorous and painful contractions, nitrous oxide gas given during pains for fifteen or thirty minutes, will bring the patient more quickly under the anesthesia. (*e*) When the presenting part is passing through the cervix or over the perineum, there is a tendency for the patient to regain the normal state before the two-hour period of scopolamin administration arrives. To prevent this and avoid a break in the anesthesia, the dose of scopolamin may be advanced at that particular time so that the interval will not be more than one or one and a half hours between doses instead of the prescribed two-hour interval. (*f*) Ether and chloroform should not be given for the delivery of the head, nor for the application of forceps. Forceps can be readily adjusted without

the patient's knowledge and the assistance given by the contracted uterus renders the forceps more effective and less injurious to the mother. To introduce sutures for repair, ether or chloroform may or may not be given, according to the severity of the trauma. If the repair is to be extensive, it is advisable to give chloroform and ether, but if the injury is slight, one or two sutures may be inserted without further anesthesia. If version is to be performed, the patient must be thoroughly under the ether or chloroform to secure complete relaxation. (*g*) Rupture of the membranes in multipara and the appearance of the head at the vulva in primipara is the signal for putting the patient up in the stirrups and applying the restrain cuffs in preparation for delivery. (*h*) If the patient is restless, be sure that she does not desire to empty the bladder, or that she is not thirsty. The majority of patients will voluntarily urinate, and may drink freely of water, if they desire. (*i*) The ideal surroundings for the patient under scopolamin is in a small room with large transom-like windows and a door or doors that fasten outside of the patient's room and no furniture in the room beyond the bed and a chair or commode. Where this cannot be provided, the patient may be kept in a bed with canvas screens at the ends and sides to make a pseudo-restraint bed for her. If these are not available, some person must sit or work within sight of the patient to prevent her from wandering from the room in search of the toilet or drink of water. (*j*) In case the patient should become very unmanageable the scopolamin may be discontinued and in two hours from her last dose she will cease to be disturbed. (*k*) Allow the patient the greatest freedom until ready to be delivered and do not suggest that she shall or shall not bear down as she will do so voluntarily when the head reaches the perineum.

The safety of this method of administering scopolamin-morphin anesthesia can best be demonstrated by the results obtained in a series of 2,023 deliveries conducted at the Mary Thompson, Frances Willard and Mercy Hospitals between June, 1914, and September, 1920. In the 2,023 deliveries there were 48 stillbirths in full-term pregnancies, or 2.3 per cent. Of the premature births, there were 40 or 2 per cent. There were 3 maternal deaths or .1 of 1 per cent. An analysis of the 48 stillbirths shows macerated 9, or 19 per cent; monsters or deformed

children 5 or 10 per cent; cord anomalies, including prolapsed cord, 8 or 17 per cent; disproportion between pelvis and child's head, 13 or 27 per cent; embryotomy for impacted transverse, 1 or 2 per cent; breech delivery, 3 or 6 per cent; eclampsia or flu in mother, 3 or 6 per cent; cause not assigned, 2 or 4 per cent. The length of labor under the scopolamin-morphin anesthesia can be gauged by the length of the anesthesia, inasmuch as the first dose was always given as soon as possible after the labor started and was continued until delivery was complete. Of 727 multipara, 49 per cent had not more than 3 doses of scopolamin-morphin, or an anesthesia less than 3 hours; 40 per cent had not more than 6 doses or an anesthesia less than 8 hours; 7 per cent had not more than 9 doses, or an anesthesia less than 14 hours, leaving only 4 per cent for an anesthesia over 14 hours. Of 877 primipara, 23.5 per cent had not more than 3 doses of scopolamin-morphin, or an anesthesia less than 3 hours; 45 per cent had not more than 6 doses or an anesthesia less than 8 hours; 20 per cent had not more than 9 doses or an anesthesia less than 14 hours, leaving 11.5 per cent having an anesthesia over 14 hours. Eighteen hours being taken as an average length of labor for a primipara and 9 hours for a multipara, it cannot be said that scopolamin-morphin tends to lengthen labor.

The asphyxiated or blue baby was observed and required resuscitation in 53 cases, 3 in primipara and 23 in multipara. Twenty-nine were in babies whose mothers had not had more than four doses of scopolamin-morphin. Twenty were in babies whose mothers had had not more than 8 doses; 4 were in mothers who had had not more than 12 doses, and 1 in a baby whose mother had had 15 doses. Of special interest in this connection is the excellent condition of the 20 babies whose mothers had been given more than 15 doses, that is, doses ranging in number from 16 to 31. Of these, no baby required any resuscitation.

In the multipara, low forceps were used 17 times; mid forceps 5 times, and high forceps 3 times. In the primipara, low forceps were used 98 times; mid-forceps 38, and high forceps 21. In 1544 cases, 14 primipara and 16 multipara had severe hemorrhages, but in every case the hemorrhage was easily controlled.

The possibility of scopolamin-morphin injuring the brain or nervous system, or producing a drug habit is more forcibly demonstrated by an injury case that came under my care in May, 1917, than by any case that can be found in this series. A boy of 14 years of age was run over by an auto truck, fracturing his pelvis and rupturing the urinary bladder, with resulting extensive extravasation of urine. Suprapubic drainage of the bladder and drainage of the extravasated area, which was necessary for many weeks, made the case one that required constant effort to relieve pain. During a period of eleven weeks he was given over 500 hypodermic injections of scopolamin 1/100th grain, with morphin. He made an excellent recovery and since the accident had finished school, working in a drug store part of the time, to assist in the family support. On the withdrawal of the drug, no symptoms of habit were detected, nor any evidence of mental deterioration.

Forcible testimony to faith in the safety of this anesthetic is found in the number of patients who returned to the hospital for subsequent deliveries. Four patients returned four times for delivery; 30 patients returned 3 times for delivery, and 159 patients returned twice for delivery.

In this report, the total number of cases—2023—were used only in connection with the fetal and maternal mortality, and the patients returning for delivery. In reporting the asphyxias, the hemorrhages, and forceps deliveries, it may be noted that the first 419 cases were admitted and only the last 1594 were used. This was done to secure greater accuracy, as in the first 400 cases, many different combinations of scopolamin and morphin were used, and we had not yet perfected the apparatus for harmless restraint during delivery. At this time, the patients were all kept in the delivery room during the entire labor. In the 1594 patients the method as described in this paper was used in all cases and the patients were kept in a so-called twilight room adjoining the delivery room until just before the delivery.

This report of 2023 cases could be more than doubled if I included the 824 deliveries of the patients of Dr. Vesper Schaffer, of Chicago, who has used this method successfully for the past six years in the private homes of this city. Dr. Elizabeth Minor, of MaComb, Illinois, gave a gratifying report of the use of this method for a period of 5 years. Her paper was read before the

Illinois State Medical Society in May, 1920, at Rockford, Illinois. Dr. Fred Phifier, of the Wheatland Sanitarium, Wheatland, Wyoming, gave a most flattering endorsement of this method in a paper read before the Wyoming State Medical Society in July, 1920. Dr. G. S. Mosher, of Kansas City; Dr. Martha Welpton, of San Diego, California; Dr. Edith McCann, of Milwaukee, Wisconsin, and Dr. Mabel Gardiner, of Middletown, Ohio, use this method, and feel that it is both safe and practical. There are many others whose names could be mentioned but the above are given as being of special interest, owing to their kind of practice or to their location.

The general applicability of this anesthetic to all cases, the cheapness of the drug, its easy portability, its simplicity of administration, its freedom from dangerous or disagreeable sequellae, all help to make it by far the most practical anesthetic in the field of obstetrics. As it is the only anesthetic at all practical for the first stage of labor, or for a prolonged labor, it is hoped that this report regarding its safety and practicability will be received by even the most conservative members of the profession and used to extend more widly that much to be desired of women—painless childbirth.

In 2023 deliveries there were 48 (2.3%) full-term stillbirths; 40 (2%) premature births; 3 (1/10%) maternal deaths.

Analysis of full-term stillbirth (48): Macerated, 9 (19%); monsters or deformities, 5 (10%); cord anomalies, 8 (17%); disproportion between maternal pelvis and fetal head, 13 (27%); embryotomy for transverse, 1 (2%); breech presentation, 3 (6%); lues in the child, 4 (9%); eclampsia or flu, 3 (6%); cause not assigned, 2 (4%).

Analysis of cause of maternal deaths: Eclampsia, 1; septic peritonitis, 1; flu-pneumonia, 1.

In 727 multipara delivered, low forceps were used 17 times, mid-forceps were used 5 times, high forceps were used 3 times.

In 877 primipara delivered, low forceps were used 98 times, mid-forceps were used 38 times, high forceps were used 21 times.

Pituitrin was not given to primipara.

In 727 multipara, 16 had severe hemorrhages.

In 877 primipara, 14 had severe hemorrhages.

All hemorrhages were controllable.

In 1604 deliveries, 53 babies required resuscitation, 30 primipara, 23 multipara; 29 mothers had had not more than 4 doses; 20 mothers had had not more than 8 doses; 3 mothers had had not more than 12 doses; 1 mother had had not more than 15 doses.

No resuscitation was required in 20 mothers who had more than 15 doses.

The largest number of doses given any mother was 31.

In 727 multipara delivered, 49% had not more than 3 doses or anesthesia length 14 hours; 11.5% had not more than 9 doses or anesthesia less than 8 hours; 7% had not more than 9 doses or anesthesia less than 14 hours; 4% had not more than 9 doses or anesthesia less than 14 hours.

In 877 primipara delivered, 23.5% had not more than 3 doses or anesthesia length 3 hours; 45% had not more than 6 doses or anesthesia length 8 hours; 20% had not more than 9 doses or anesthesia lnegth 14 hours; 11.5% had not more than 9 doses or anesthesia length 14 hours.

In 1604 deliveries, 1.25% had more than 15 doses.

Position and conduct of the patient: In the first half of the first stage, *sleeping quietly.* In the second half of the first stage, during a contraction, *restlessness increasing to the end of the second stage.* Between contractions, *sleeping quietly.*

Position and conduct in the second stage: During the descent of the head, *sitting upright with the leg crossed tailor fashion.* Head on the perineum, *lying on the side and bearing down with each contraction.*

Rules for conduct while alkaloidal anesthesia and analgesia is being produced:

1. *Finish all preparations before the first dose is given.*
2. *Keep room dark and quiet. .*
3. *Allow no one in the room with the patient.*
4. *If pains are severe or labor advanced give nitrous oxide gas during pains for one-half or three-quarters of an hour.*

Rules for conduct in maintaining alkaloidal anesthesia and analgesia.

1. *Allow the patient plenty of water but NO food.*
2. *Allow the patient to do as she desires unless it threatens to be injurious.*

3. *Do not question or converse with the patient. It is useless to ask her to bear down or refrain from it.*

4. *After the first three doses noise and light disturb the patient very little.*

5. *Do not give ether or chloroform in addition to the alkaloidal anesthesia for the APPLICATION OR USE OF FORCEPS.*

6. *Put the patient under ether or chloroform to perform VERSION, PUBIOTOMY, OR REPAIR EXTENSIVE LACERATIONS.*

7. *If the patient is UNMANAGEABLE DISCONTINUE the scopolamin and in two hours she will be in normal mental condition.*

Rules for putting the patient into restraints for delivery.

1. *Rupture of the membranes in multiparae.*

2. *Appearance of the head at the vulva in primipara.*

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DISCUSSION.

Dr. J. F. Oechsner: There is nothing that I care to discuss particularly relative to the subject itself. I believe that Dr. Van Hoosen is perfectly willing that we throw aside the courtesy of host and have a free criticism of her paper, whether favorable or adverse.

We know that twilight sleep has not met with favor in New Orleans, or generally in the United States for that matter. I know nothing about the subject personally, but think the door should be thrown wide open for free discussion that we may get at the truth and alleviate the sufferings of prospective mothers, if possible.

Dr. P. J. Carter: I wish to heartily endorse Dr. Van Hoosen's paper. I have had quite a little experience with the treatment myself. It was my pleasure to give twilight sleep to a number of the one hundred cases in the New York Lying-in Hospital, which were published by Harrar and McPherson. I have personally had some one hundred and fifty cases. I demonstrated the treatment in the city of New Orleans at Charity Hospital in 1914 by giving it to fifteen cases. Thirteen of these were successful, two being unsuccessful. The two unsuccessful cases were due to the patient not being in labor long enough, that is, they delivered themselves in less than two hours from the time the treatment began.

I use gr. 1/100 scopolamine hydrobromide with gr. 1/3 pantopon for the initial dose, after which the scopolamine alone is used. The scopolamine is then given each one-half hour until the third dose is given, then I cut it down to gr. 1/200, or wait until patient shows signs of coming out of it. I do not use morphine at all, claiming that pantopon does away with the nausea, vomiting and headache which sometimes accompany the administration of morphine.

I have never witnessed a blue baby in this form of treatment.

Three months ago I had a case in a multipera, whom I gave the treatment to in unfavorable conditions, in a one-room apartment house. I gave her gr. 1/100 of scopolamine and gr. 1/3 pantopon at the initial dose then repeated the scopolamine gr. 1/100 for two more doses. Ten minutes before delivery I gave her 1/200 scopolamine. She delivered in one hour and fifty minutes, with absolute amnesia and analgesia.

The pulse of the patient and the fetal heart are taken every fifteen minutes after the first injection of the drug, which is a material advantage over treating the cases without twilight sleep. I am in actual attendance from the first injection of the drug until the birth of the baby.

In no case have I ever seen the maternal pulse or fetal heart sound vary five beats during the whole treatment. I have given as many as fifteen doses of gr. 1/100 scopolamine, given every half hour, without producing any bad results.

I would like to ask Dr. Van Hoosen why she uses the hydrochloride instead of the hydrobromide of scopolamine, or does she notice any difference in the action of the two drugs? In my work I use the scopolamine hydrobromide.

Dr. E. L. King: I would like to ask something about blue babies. I believe the Doctor said there were fifty-three. That gives about 2½%, which is somewhat higher than one would expect. I would

like to ask if with those blue babies were included the babies delivered instrumentally?

Dr. McCutcheon: I would like to know what the monsters or deformities were.

Dr. Herman B. Gessner: In what way does Dr. Van Hoosen's technique differ from that of the Freiburg Clinic? I should like to know the difference in the two techniques.

Dr. Van Hoosen (closing): Dr. ———— wants to know what attention we pay to the pulse, respiration, etc. The nurse in charge, before giving each hypodermic injection of scopolamine, takes and records on the chart the foetal and maternal pulse and the maternal respiration. The patient receives exactly the same attention, and no more, than she should have if no anesthetic was given. The physiological effect of 1/100 gr. doses of scopolamine is to increase the force and frequency of the foetal and maternal heart. A foetal heart that could not be heard before the scopolamine was administered will become audible to the dullest ear after the mother has been given three or four doses. This effect is so pronounced that I have often used it as a diagnostic point in diagnosing pregnancy in the third trimester.

Is the patient left alone? Yes, while the first three doses are being administered the patient is left quite alone unless the labor was advanced when the anesthetic was begun. The nurse looks in on the patient frequently but we do not keep anyone in the room with the patient until she nears the beginning of the second stage. After the second stage begins, we never leave her alone. Either nurse or interne is in constant attendance. I do not feel that the patient needs watching any more closely than she should be watched if she had no scopolamine morphine. I am aware that there are physicians who feel it is not necessary to be in attendance on the patient until the head is ready to pass the perineum, but I feel that the time when the patient needs close attention and intelligent and skillful care is from the moment she goes into labor till the head is ready to pass the perineum. I believe that pre-delivery care is as important as pre-natal care.

Regarding the best preparation of scopolamine for inducing twilight sleep, I can only say that I have always used the 1/100-grain tablets of Parke, Davis & Co. I began my work with this preparation and having had satisfactory results, have continued using the same preparation. I believe any reliable American firm will furnish a satisfactory article.

The doctor speaks about not getting results in less than two hours. I believe if you will question patients closely, you will find that in five minutes after the first injection of scopolamine has been administered, the pain is more bearable and that patients are grateful for even that little relief.

There seems to be an idea that scopolamine is only suitable as a first-stage anesthetic. Drs. De Lee and Cornell consider it of the greatest value in the first stage in the conduct of an occipito posterior position, but they and many other obstetricians seem to question its safety in the second stage of labor. In this series of 2023 cases every patient had a dose of scopolamine during the second stage and I believe it is not only a safe procedure, but necessary for a perfectly successful twilight sleep. The fifty-three resuscitations included every case where the baby did not breathe and cry immediately after birth and also included all resuscitations after forceps deliveries. The babies requiring resuscitation were not blue babies, as I have explained in my paper.

As to the nature of the monsters: if my memory serves me, they were non-closures of the abdominal cavity, anencephalus and hydrocephalus.

The effect of the scopolamine morphine anesthesia on patients who were delivered more than once by this method shows it to be as efficacious—if not more so—in the second, third or fourth deliveries.

How does the technique that I use differ from the Freiburg technique? In the size of the dose, which is always 1/100 gr. of scopolamine no matter how many doses have been given and that each dose is given at regular stated intervals and no use is made of a memory test as a guide to repeated doses. I have tried the Freiburg method but have never been pleased with it. It requires too much disturbance of the patient and there is always an uncertainty as to when and how often you should give repeated doses of scopolamine.

I have never used a dose of H. M. C. and object to it because of the large amount of morphine in each dose.

I would like to ask Dr. Newman what bad after-effects he has had with scopolamine morphine.

In the 2023 cases here reported, we had only six Caesarian sections. Our large number of high forceps came from allowing the primipara a trial labor and I am quite sure that twilight sleep was no factor in our use of high forceps. Since this series was compiled, we have had nearly 1000 of twilight sleep, but we have given up high forceps and treat disproportions with either Caesarian section or pubiotomy. In Caesarian section or pubiotomy, we have no infant mortality. I think there is nothing more destructive to the baby than the use of high forceps.

Obstetrics is an art and for a successful delivery it is necessary to understand obstetric science as well as the proper use of all anesthetics. If the patient is under twilight sleep and is not suffering, you may be inclined to wait too long before interfering, but if the patient is not under twilight sleep, the pleadings of the patient and the family may lead you to interfere unnecessarily. Twilight sleep is simply an anesthetic and if you do not have good results without twilight sleep, you will not have any better results with twilight sleep.

In regard to lacerations, I can truthfully say that we have fewer tears with twilight sleep than without, due solely to the greater time taken for the head to pass over the perineum.

I would like to call your attention to the fact that in this series of 2023 cases, no patient developed puerperal insanity or convulsions during the twilight anesthesia. Considering that statistics give puerperal insanity as occurring once in every 400 cases, we may rightfully say that twilight sleep is a prevention of puerperal insanity and convulsions during labor.

As to management of an excitable patient, I would like to cite a case: At the time of the A. M. A. meeting in Detroit four or five years ago, I delivered two patients under twilight sleep. One was a Russian Jewess, the other an American woman. The behavior of patients under twilight sleep depends upon how they have been trained socially. If an individual has been brought up from childhood to control her reflexes or, in other words, has good manners and later in life goes under twilight sleep, she will be well behaved, but otherwise she may not be so easily controlled.

In this instance the Russian Jewess was born in Russia and reared under adverse conditions. The American had been carefully trained in good manners. The patients were both in the Woman's Hospital of Detroit and as the labor of the American woman was progressing more rapidly, I was staying with her till she delivered, but I was suddenly and urgently called to the room of the Russian Jewess and found her out of bed, standing in the middle of the room, with a chair upraised in her hands and six or eight visiting men physicians trying to control her. I said: "Everybody leave the room," and I

took my position in the back part of the room. I suspected that she had tried to get out of bed to empty her bladder and being opposed, had begun to fight; so, seeing a pail, I pushed it towards her. My suspicions were correct, for she immediately sat on the pail and emptied her bladder. Most people empty the bladder before going to bed, so I shouted: "Jump into bed," and appealing to her modesty, said: "Somebody is coming!" She asked "Who?" I answered, "A man." She made one bound into her bed and drew the sheet up over her. No amount of physical force could have gotten her into bed or kept her there.

You must understand the management of patients under twilight sleep through their reflexes. They will not hit their heads or be injured if properly managed.

THE ANNUAL MEETING

of the

THE LOUISIANA STATE MEDICAL SOCIETY

Will Take Place in

NEW ORLEANS ON APRIL 10, 11 AND 12

New Orleans Medical and Surgical Journal

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EDITORIALS.

LOUIS PASTEUR.

During the closing days of December, 1922, many organizations in the medical centers of the United States and a number of the American Universities held celebrations in honor of the 100th anniversary of the birth of Louis Pasteur. This issue of the Journal is devoted to the celebration held by the Orleans Parish Medical Society and represents their effort to honor one who has done so much for the advancement of science and medicine particularly. Born 100 years ago on December 27th, 1822, of hard working parents who made every sacrifice for his edu-

cation and training, he grew in knowledge and accomplishments until his fame spread throughout the entire civilized world as one of the greatest benefactors of the human race. Educated as a chemist, he became interestd in crystallography and observations made during the study of this science, led to the belief that putrefaction and fermentation are due to the specific effect of living things. He then learned that he could produce a particular fermentation by using a known "seed" in suitable mixtures or juices and thereby founded the science of bacteriology. He proved that germs are the cause of disease and by incontrovertible experiments showed that infectious diseases in man, animal and plants could be controlled. He is, therefore, the father of preventive medicine.

The above are but a few of his wonderful attainments and when one considers the acomplishments of this man in unexplored fields and the incalculable benefit he has brought to the world we stand in wonder at the largeness of his intellect, and the greatness of his soul.

We learn from reading his life that he was a gentle soul, deeply religious, wholly unselfish and unspoiled to the end, and wholly submerged in his life work. He had the great fortune to live and realize the good that he had done and the suffering that he had relieved, dying on September 28th, 1895.

A MILLION.

We are informed by the lay press that the Charity Hospital at New Orleans, is to institute a statewide drive for the purpose of raising $400,000. Certainly there can be no more worthy objects of charity than the poor when afflicted by disease. To make the goal of this campaign a million dollars would not be too much, but by all means, let this million as well as every other available dollar *be for the POOR, EXCLUSIVELY.* This does not apply to emergencies requiring immediate attention when no questions should be asked. However the limited facilities of this great institution—limited compared to the enormous services it is called upon to render—should be safeguarded against the miserly and unscrupulous. The Charity Hospital is intended solely "for the indigent poor of the State of Louisiana." Should there be but an occasional instance of imposi-

tion on the institution, by just so much must *some worthy invalid be deprived of deserved attention.* The populace comprising the State of Louisiana and surrounding states is neither worse nor better than that of the average community of their size. So that reasoning alone from the law of averages it would be expected that a rather considerable number of impositions should occur during say, the stated period of a year. At a time when every dollar must be made to count, with an organized social service department, with the centralization of all admissions as they will be in the new clinic building, would it not be wise to "check up" on the unscrupulous? It is certainly possible to ask an applicant in an *inoffensive way* his means of livelyhood, the number of his dependents and whether or not he is a property holder. With even this meagre data, the social service department could investigate the suspicious case. Such a plan might prove a revelation and above all things might serve the most laudable purpose of affording the *worthy poor,* without question of a doubt, *the fullest possible benefits available,* according to the hospital's entire resources.

NOTA BENE.

Whenever a member of the State Society gains distinction or unusual recognition as a result of his personal attainments or scientific contribution to the general store of medical knowledge, it would seem unnatural for the Journal to fail to point out these achievements, with perhaps a bit of pardonable pride. In this connection the pioneer work of Dr. Amedee Granger on the X-rays of the sinuses is of particular note as it opens up new vistas undreamed of in the past. This work is replete with promise for the future and has already gained widespread recognition for its author.

In this connection also is to be noted the election of Dr. Rudolph Matas to the exclusive Société Nationale de Chirurgie, of Paris.

We learn also of the election of Dr. Matas, as a member of the Royal Academy of Medicine of Barcelona, Spain. That this election took place under suspension of the rules, "by acclamation," was a fitting tribute to the "most learned surgeon" and redounds also the credit of the State Society.

THE SCHOOL DOCTOR.

Every now and then we have experienced in the homes of our friends, patients or ourselves great anxiety, uncertainty and great expense, on account of the illness of some boy or girl away from home at school.

Unless one has had personal experience with a sick child hundred of miles from home, these things may not be appreciated.

The best and most fashionable school is selected for Joseph or Elizabeth. Every consideration is had for location, climate, water, the standing of the faculty and the morale and scholastic standing of the school alumni. Athletics, military training and what not are taken into consideration, but except in rare instances is any attention paid to the character and kind of medical supervision and facilities for attention to and proper modern care of the possibly sick boy or girl.

The trouble with many boarding schools and preparatory schools is that not enough attention is given to the physical comfort, especially as regards warmth of children and young people from the south going into colder climates.

The very highest grade of physician should be demanded by parents more surely than the highest grade of teachers.

A poor doctor is costly in money and life.

As physicians we should pay more attention to this important matter, in helping in the selection of a school.

THE LOUISIANA STATE MEDICAL SOCIETY

Will Meet in

NEW ORLEANS ON APRIL 10, 11 AND 12

SOCIETY PROCEEDINGS.

PROCEEDINGS OF THE HOTEL DIEU STAFF.

Monthly Meeting for February, 1923.

The President, Dr. Homer Dupuy, in the Chair.

ASCITES OF LESSER PERITONEAL CAVITY.

DR. DANNA showed a case of Ascites of the Lesser Peritoneal Cavity due to occlusion of the foramen of Winslow following trauma to the upper abdomen, with operation and apparent cure.

The patient came to the Hotel Dieu August 1st with a history of striking his epigastrium against the corner of the dining table during a nightmare. He presented the picture of a severe abdominal injury, immediate operation being considered. He was given rest, morphine and starvation, and gradually improved, but continued to have some pain, with occasional severe colic. After a few days he developed a swelling in the left hypochondrium which gradually increased in size. Having in mind a boy seen some fifteen years ago who had been run over by a cart and who followed a somewhat similar course, a tentative diagnosis of ascites of the lesser peritoneal cavity was made, and operation decided on. August 7th a left rectus incision was made. The stomach and transverse colon were found lying across the line of incision, flattened out upon and adherent to the abdominal wall, with a space of about two inches of gastro-colic omentum between them. This omentum was slit in the line of incision and a large quantity of slightly brown tinged fluid escaped under pressure. A drain was inserted and left in for more than two weekes. October 4th he left the hospital with the wound healed. He had felt well since operation two months before. He did well till three weeks later when following another injury he began to have pain again and soon developed a swelling of the epigastrium and right hypochondrium. He came back to the Hotel Dieu with an oblong swelling under the edge of the liver that moved up and down with respiration. Gradually the swelling in the right hypochondrium subsided and the left hypochondrium became swollen and dull on precussion. It was concluded that the ascites had re-

curred and operation was again decided on. The problem was to get some permanent result. Evidently ascitic fluid was being poured into the lesser cavity faster than the lymphatics could take care of it, and the foramen of Winslow being closed, either as a result of the original trauma or a congenital defect, the fluid could not find its way into the greater peritoneal cavity the vast absorptive surface of which would probably have easily taken care of it. It was plain, therefore, that either the foramen of Winslow must be rendered patulous or a new foramen must be created. As drainage was what was desired, it seemed that the creation of a permanent opening between the greater and lesser cavities at a point where gravity would facilitate drainage was the procedure of choice.

The abdomen was opened at the site of the old incision, the skin scar being excised. To the operator's surprise, the abdominal wall was found free of adhesions the stomach and colon being free in the cavity, lying on the surface of a cystic mass that ocupied the greater portion of the upper abdominal cavity, the stomach lying on its anterior surface and the colon forming its antero-inferior border. This mass was now lifted so as to show the under surface of the transverse meso-colon and the suction apparatus inserted into the fluid cavity through a small puncture. Seventy-five ounces of fluid was drawn off. The puncture was now enlarged so as to make a vertical slit about three inches in length. The middle of the edges of the slit were folded over and tacked with a few sutures to the under surface of the meso-colon, resulting in an elliptical opening three inches vertically and about two inches transversly, the margin of which was lined with peritoneum. He made an uneventful convalescence and has been getting fat since.

DR. FICKLEN thought Dr. Danna's case was most interesting and rare. He was very much struck by the recurrence of formation of fluid in a case which apparently was traumatic peritonitis. All types of peritonitis except those like in neoplasm or tuberculosis have a tendency to turn one way or other in a short time. There might have been a slow leakage from a ruptured blood vessel or from lymphatics. The boy looked to be in good condition, but he shared Dr. Danna's fear about a hernia and recurrence.

DR. GELPI wanted to know if there was any evidence of fluid in the general cavity now?

DR. NIX asked whether the treatment was the same in the similar case 14 years ago.

DR. SALATICH thought it was hard to keep the opening in peritoneum patulous. He believed that the opening would close soon. Stomach would have a tendency to go down that way and become adherent as in posterior gastro-enterostomy. The point that struck him was the possibility of recurrence.

DR. PHILLIPS asked what was the nature of the fluid, and if it was encapsulated or not? He also asked as to the possibility of pancreatic cyst.

DR. WALET asked if repeated tapping would not have cured him, as in pleura effusion or Hydorcele?

DR. DANNA in closing said that occasionally we see cases in which the foramen of Winslow is congenitally closed. This man received an injury to his epigastrium. Whethere his foramen of Winslow was already closed at the time of the injury or became occluded as a result of the same trauma that caused the serous effusion was not determined and matters but little. The fact remains that more fluid was being secreted than was being absorbed and it was therefore accumulating. Had this fluid had an exit into the greater cavity, the absorptive surface of which is possibly 100 times greater, it would probably have been taken care of and produced no symptoms.

There was no fluid in the greater cavity of the case presented. At the first operation the greater cavity was not opened, the adherent colon, stomach and omentum shutting it off. The lesser cavity was opened by blunt incision through the omentum.

It was not a pancreatic cyst. There was no question as to the fluid being free in the lesser peritoneal cavity. It was a clear straw colored serum.

The necessity for making a second incision, and the greater probability of its re-closure, together with possible difficulties in its performance decided against re-opening the foramen at its normal site. An opening through the gastro-hepatic omentum was considered but it was thought that this would probably

close more readily and its performance be attended with more difficulty and risk to the patient. Although the danger of hernia was borne in mind, the advantage from the standpoint of drainage, the greater ease of making a permanent opening and the facilitation of drainage at this point by gravity, were the factors which finally decided in favor of an opening in the transverse meso-colon.

The other case fifteen years ago was cured by prolonged drainage. Either the foramen of Winslow finaly opened, or the lesser cavity closed as every other drained cavity in the peritoneum closes, by granulation and obliteration of the cavity.

RECURRING INTUSSUSCEPTION.

DR. MAURICE GELPI reported a case of intussusception, apparently recurring, in a child two years of age.

The child had always been strong and robust. He was left in a swing and when the mother returned, she found the child out of the swing, on the porch, crying and complaining of his abdomen. The mother inferred that the child had fallen out of the swing. The same day the child vomited a small amount of blood. For two weeks there were periodic attacks of cramps, nausea and vomiting. At this time a sausage-like mass was noticed in the epigastrium by the mother. For the next seven days the mass and periodic cramps persisted, while the nausea and vomiting were such that the child could retain nothing Blood and mucus had been noticed once or twice in the stools. There was a daily movement.

Three weeks after the suposed fall from the swing he was brought to New Orleans and when first observed gave the impressión of being critically ill. The child was very week, restless and emaciated; the pulse was regular but rapid and feeble, about 140, the abdomen was soft, slightly distended and rigidity was absent. Running transversely across the epigastrium could be easily palpated a sausage-like, doughy mass, occupying the position of the normal transverse colon. X-ray examination at this time revealed an indefinite mass in the epigastrium apparently extending downward in the direction of both flanks. No mass could be felt per rectum. Total white blood count was 16,600 and 57 Polys; Hemoglobin 70% and the Red count

unsuccessful on account of a breech in technique. A few red blood cells were found in the stool. Intraabdominal hematoma and intussusception were thought of as the most probable diagnosis. In view of the child's impossible condition from the surgical standpoint and considering the fact that the child had survived three weeks without intervention, it appeared justifiable to delay operation until further information could be obtained. Beginning the next day the cramps subsided and the child retained water in small amounts. The blood count at this time was 14,000 white cells and 70 polys and 3,500,000 reds. Paroxysms of cramps continued to be less frequent then ceased. This improvement continued for about three days, with only occasional vomiting, though the mass persisted. The mother had previously observed however that at times the mass seemed to disappear. This observation was corroborated about two days later when the case was first seen in consultation with Dr. DeBuys. At this time the mass could not be outlined. The child was now handling liquids and two ounce feedings of cream of wheat or strained oatmeal. X-ray pictures were unsatisfactory and apparently disproved the presence of an intussusception though the work was unsatisfactory on account of the child's condition and behavior. The transverse colon did not show in the pictures but was visualized under the fluoroscope by Dr. Fortier. For the next seven days the child's general condition improved remarkably, when persistent vomiting suddenly reappeared, as did also the cramps, the mass and bloody stools. At this time, the most prominent part of the mass was on the level of and to the left of the umbilicus. Six hours after recurrence of symptoms laparotomy was performed. This was about five weeks after the original symptoms. Exploration revealed an intussusception beginning at the ileocecal valve and extending to the level of the recto-sigmoid junction. It was easily reducible and outside of numerous patches of fibrin on the surface of the bowel, no abnormalities were found except that the entire cecum and lower half of the ascending colon were uniformly thickened and edematous. The bowel was simply restored to the abdomen, dependence being placed on the rapid formation of adhesions between the visceral and parietal peritoneum. Recovery was uneventful, without nausea, vomiting or distension. The case would have been shown, but had re-

turned to the country. Report by telephone, twenty days after operation, was that the child was doing splendidly.

The case was interpreted by Dr. DeBuys, Dr. Fortier and Dr. Gelpi, as having had an intussusception following a fall, recovering spontaneously and having a recurrence, as revealed at operation.

DR. FORTIER was convinced that this was a case of intussusception that reduced itself, because he had examined the case between the two attacks of acute symptoms. At this time the child was given a barium enema and immediately expelled this. Later, he gave him a barium meal and after six hours the stomach was emptied and the meal was already in the caecum. At the 24 hour examination, almost all of the colon was filled. The middle portion of the transverse colon was filled with gas. The rectum and sigmoid were filled with the barium and if the intestines were intussuscepted at this time there could have been seen obstruction of the barium meal with dilatation of the bowel proximal to the point of obstruction.

DR. DANNA was very glad to see the pictures because they proved that Dr. Gelpi was not wrong. If the child had intussusception continuously from the beginning, gangrenous bowel would have been found. He could not conceive of the intussusception remaining five weeks without being adherent. He did not think that could be possible.

DR. BLOOM said that the question of intussusception was important because the condition was very common in young children. As late as 1890, most of us considered the question of intussusception as fatal. As a matter of fact practically 90% *were* fatal. Now, the mortality had decreased to about 60% providing the diagnosis was made within 24 hours after onset. It seemed that practically 75% of all cases noted were under one year of age and involved the ileocecal valve. Other cases were found in and around the transverse colon. If a diagnosis was made early, simply massaging with oil or hot water oftentimes distributed the mass.

This was an unusual type and also brought out the fact that the so-called ileal type and jejunal type were seldom encountered.

DR. BELL asked how long the first attack had lasted.

DR. GELPI answered that the severe symptoms were intermittent, lasting altogether about 6 days. This history was obtained from the mother as the child was not seen by Dr. Gelpi until three weeks after the fall. When first seen, however, the mass was undoubtedly present and was demonstrated to Dr. Hamilton Jones and Dr. Dimitry.

It was to be noted that during the entire illness the child was having daily bowel movements always containing feces.

Three types of intussusception were commonly recognized, the enteric, where the small bowel was invaginated into itself; the colic, where the large bowel was invaginated into the large bowel, and the entero-colic, where the small bowel was invaginated into the large bowel through the ileo-cecal valve. The latter was the most common type and the case belonged to this group.

Seventy-five per cent of the cases occurred in children under one year of age.

THE LOUISIANA STATE MEDICAL SOCIETY

Will Meet in

NEW ORLEANS ON APRIL 10, 11 AND 12

PROCEEDINGS OF THE TOURO INFIRMARY STAFF.

Monthly Meeting for February, 1923.

Dr. M. Feingold in the Chair.

PURPURA HEMORRHAGICA.

DR. HENINGER presented two cases. The first case was a widow 38 years old. She came to the skin clinic on Sept. 7, 1922, for an eruption over the upper part of the chest. Her family history was negative except that her husband died of tuberculosis and she nursed him for 18 months. Past history was negative.

In September, 1922, spots appeared over the chest and upper abdomen, for which she came to Touro Infirmary. There were no previous attacks, no chills, no fever or other symptoms like cough or shortness of breath. She was seen by Dr. Oriol, who made a diagnosis of purpura hemorrhagica.

A Wassermann was made and on September 14th, the report was positive. She was put on mixed treatment. The spots disappeared from her body one month after this course of mixed treatment was started. About two weeks ago she had a slight hemorrhage (feeling a warm fluid in her mouth, which was blood). She had a copious hemorrhage later. There were no other symptoms. She was transferred to the medical clinic on December 7th. On that date examination showed a well-developed woman and well nourished. No purpura noticed at that time. Superficial examination showed no varicose veins in the pharynx but mucous membrane stained from a recent hemorrhage. Heart and lungs negative. X-ray picture of the chest showed an infiltration of both apices, more marked on the right, according to report by Dr. Samuels.

Dr. Heninger went over the case again and could not find anything in the lungs at all. He examined her heart again and found nothing. The blood count was made and the red blood cells were 4,460,000, white 16,200. Differential normal. Coagulation time was 2 minutes 45 seconds (made December 13th). The urine was negative. She was put to bed at home with a temperature observation every four hours. Her temperature was never over 98 degrees in the course of six days. No sputum was

obtained. The reason for presenting this case was that purpura from tuberculosis was rare, being only mentioned in the literature. Purpura associated with syphilis was rare also, but under mixed treatment the lesions disappeared.

The woman demonstrated was very well developed and on repeated examination nothing definite could be found in the lung. Dr. Heninger doubted that this was a tubercular infection and if so, it was certainly not active. He did not think this was lues of the lung as infiltration at the top was very unusual in lues.

The second case was a native of Louisiana, 67 years of age; mother of thirteen children. Her family history was negative except for a husband dying at the age of 70 years from heart trouble. She passed the menopause 30 years ago. Her past history was negative, except for some rheumatic pains which she had for some time. At various intervals for the past 25 years pain in the joints and calf of limbs was complained of. Two months ago she noticed a discoloration of the lower extremities for which she came to the surgical clinic of Touro Infirmary, having chills and fever. At that time she had a bilateral distribution of discoloration all over the legs, thighs, arms, etc. Wassermann was negative. She was sent to the skin clinic for confirmation of diagnosis of purpura hemorrhagica, which was confirmed. She was put on mixed treatment in the surgical clinic and sent to the medical clinic. On November 22, she was seen in the medical clinic and her history then was that two months previously she began to have chills and fever, with pains in the joints, and these spots came all over her extremities. She went to bed and was under treatment by a doctor in St. Rose, La., but obtained no relief. On November 22nd she had marked dyspnoea, some cyanosis; petechia of both extremities, varying in size and color. Some ulcerations varying in size and very superficial, were present on the lower extremities and there was tremor of the hands. The heart rate was 139; the heart enlarged to the left with normal rhythm; the pulmonic second sound accentuated and a short, soft, systolic murmur at the apex transmitted to axilla, was heard. There was no marked sclerosis of blood vessels. Blood pressure was 185-85. Blood count showed (11-23-22) Red 4,250,000, white 14,600, N. 71%, M. 29%, Hgb. 85%.

The urine showed a few hyaline casts; albumen a trace and no sugar. She was admitted on the 25th day of November (inside medical service) and was put on mixed treatment, stock solution of No. 153 with progressive doses of potassium iodide. She did very well. The day the patient went up to the ward urinalysis was made. Her urine contained sugar. The amount was not known, but she had albumin and casts. The next day more sugar was found and still albumin. Blood sugar on 11-27-22 was .16%. The blood culture was reported negative. Wassermann two days later came back strongly positive. She was at that time running temperature, but improved rapidly on mixed treatment with drops of potassium iodide. The spots disappeared. By December 1st, it looked as if she would get well. On December 4th she began to have chills and fever again. Blood count was 5,500 with a normal differential. Iodides and mixed treatment were stopped on account of nausea and soreness of the mouth.

On November 10th mixed treatment without additional iodides was begun. Three days ago she had a few more spots and rise in temperature.

This case was brought up because, according to Dr. Heninger, there was no doubt about the cause of the purpura being due to endocarditis subacute. He felt he could sustain that diagnosis by the blood count, chills and fever. He admitted the possibility of an endocarditis being implanted on a previously diseased valve which might have been leutic or streptococcal, but it was the aortic valve which was usually attacked by lues. Another reason was the fact that the urine showed sugar. The kidneys were diseased, the blood vessels were diseased, the heart was diseased, and the presence of sugar showed that the pancreas was affected.

DR. LYONS was interested in Dr. Heninger's cases because of his long interest in the subject of purpuric conditions. It seemed to him that the title of "acute endocarditis with purpura hemorrhagica" was not quite correct. He thought that the title should be "endocarditis with symptomatic purpura." There were but two forms of purpura hemorrhagica—one was the idiopathic and the other the symptomatic variety. Purpuric eruptions, on the other hand, occurred in a large number of infectious diseases, chronic intoxications and certain poisons. Purpura associated with endocarditis was very common.

Dr. Lyons thought the X-ray picture of the first case was most interesting in view of the lack of physical signs. The condition must be the result of old changes in the lungs. It seemed that the diaphragm on the right side was very high; there was a fibrous band in the left lung from the pleura to the left border of the heart, also bronchial gland involvement. Whether or not these changes were syphilitic, he could not say. The whole condition, considering the improvement, would suggest that that was the main etiological factor.

In the second case Dr. Heninger said the Wassermann was strongly positive. That made the reaction a little difficult to interpret. The symptoms that she had of an endocarditis with chills, fever, etc., might be an endocarditis of any type. The little spots she now had were hemorrhagic and frequently found in subacute endocarditis. Petechiae in these cases were not infrequently embolic in nature.

Dr. Lyons was rather inclined to think this case was a leutic endocarditis. It might be due to pus cocci. In the subacute forms it was not always easy to get a positive blood culture. She apparently had an exacerbation while still under antisyphilitic treatment. The history of 13 children, her appearance, etc., would not strongly suggest a luetic origin and the trace of sugar in the urine might be due to arteriosclerosis. In the idiopathic variety, which was rare, there were well-developed changes associated with severe hemorrhage and prolongation of the bleeding time, a non-retractile clot. The blood platelets were markedly diminished, but the coagulation time not markedly changed. In the symptomatic variety, the blood changes were not so marked. If these cases had actual hemorrhages, he would probably put them down as "endocarditis with symptomatic purpura hemorrhagica."

DR. KEARNEY said that the question of purpura reminded him of a case he had a year or so ago with Dr. Lacroix. The patient had rheumatism with purpuric spots, a condition which was called peliosis rheumatica. In routine examination for tonsillectomy, he discovered that he had a prolonged blood coagulation time—about 7 or 8 minutes. Calcium lactate was given in large doses over a period of a week or so and the blood coagulation time reduced to 3 or 4 minutes before he removed the tonsils. He had feared post-operative hemorrhage on account of the pur-

puric spots. There was no bleeding until the day following tonsillectomy, when the patient started spitting blood. The bleeding came from an oozing surface, first on one side and then the other and not from any vessel large enough to be ligated. The first day it yielded to local application of saturated solution of tannic and gallic acids and the subcutaneous administration of 2 cc. of hemaplastic serum. The second day the hemaplastic serum was repeated. When bleeding recurred on the third day 20 cc. of coagulen ciba were given intravenously by Dr. Lacroix. Following this the bleeding stopped and did not recur.

DR. ORIOL, in referring to the first case, said that the case first came to his clinic in September. He found her covered with these purpuric spots. In between these purpuric spots there was a macular eruption which made him suspicious of lues. He had a Wasserman made. The Wasserman came back strongly positive. Mixed treatment was given immediately and the spots disappeared entirely in about three weeks. She came back about two months after complaining of having had hemorrhage and of splitting blood. She was transferred to the Medical Clinic, where she came under Dr. Heninger's care. There was no doubt in Dr. Oriol's mind that this case was a syphilitic purpura. It was the first case which he had seen that was really syphilitic in origin. He thinks that if ever this were kept in mind many more cases of luetic purpura would be found and that any case of purpura should have a Wasserman made to find out if it were of luetic origin. The second case was sent from the Surgical Clinic for confirmation of diagnosis. Apart from this he knew nothing of the treatment of the case.

DR. LEVIN asked with reference to Dr. Heninger's second case whether another urinalysis was made to determine the presence or disappearance of glycosuria. The combination of lues and diabetes was a very interesting one. Some syphilologists claimed that a luetic condition influences diabetes. In other words, their contention was that, while the luetic infection which involved the pancreas was present, glycosuria was also present, and by treating the underlying factor, lues, the glycosuria disappeared. He had spoken to Dr. Leman on this subject; was not sure whether we were justified in entertaining such a contention. It would be very interesting to observe cases of this type and watch results.

DR. HENINGER said the first Wasserman mentioned by Dr. Lyons was made September 14th and was reported negative. The second Wasserman was made on the 26th day of November, which was about two months after sixty days of treatment; the report was strongly positive. As far as the sugar was concerned, he was under the impression that this was an interstitial lues all over the body. This woman had casts, albumin, blood cells in her urine and a blood sugar of 16% on fasting, and it seemed that if she had a true diabetes, and in spite of kidney being damaged, the blood sugar should have been higher. He did not consider this case one of diabetes except in so far as it was due to interstitial pancreatitis due to syphilis.

He could not answer whether the sugar had disappeared from the urine, because since the third specimen was examined no urinalysis had been made.

THE LOUISIANA STATE MEDICAL SOCIETY

Will Meet in

NEW ORLEANS ON APRIL 10, 11 AND 12

NEWS AND COMMENT.

BULLETIN OF THE LOUISIANA STATE MEDICAL SOCIETY. The approaching meeting of the Louisiana State Medical Society, to be held in New Orleans, La., April 10, 11 and 12, 1923, will be from all appearances one of the best held by the Society.

Besides the unusual character and attractiveness of the scientific program, which is without doubt the best that has ever been offered, unusual plans are being made for the social entertainment of our members, including all doctors, ladies and guests.

Dr. Amadee Granger as Chairman of the Arrangement Commitee, in co-operation with his active and energetic subcommittees, are doing all in their power to give those in attendance a lot of entertainment during the spare moments between the scientific sessions. A detailed announcement of the social entertainmeent will be made at a subsequent date.

Headquarters for the Louisiana State Medical Society will be at Hutchinson Memorial, Tulane University of Louisiana, 1551 Canal Street, New Orleans, La.

Anyone wishing special reservations at the hotels may obtain same by communicating with the clerks of the following hotels:

The Grunewald Hotel, University Place.

St. Charles Hotel, St. Charles and Common Streets.

De Soto Hotel, Baronne Street.

Monteleone Hotel, 214 Royal Street.

The following is the scientific program received up to date:

SECTION ON MEDICINE AND THERAPEUTICS.

Dr. A. E. Fossier, Chairman, New Orleans.

1. "An Analysis of 14 Cases of Pulsus Alternans and Its Detection by the Ausculatory Blood Pressure Method," Dr. Randolph Lyons, New Orleans.

2. "Digitalis in Heart Failure," Dr. J. Birney Guthrie, New Orleans.

3. "Status of Certain Cardio-Vascular Conditions, with Treatment Illustrated," Dr. H. P. Jones, Tulane University, New Orleans.

4. "Treatment of Tuberculosis," Dr. W. J. Durel, New Orleans.

5. "Complete Transposition of Thoracic and Abdominal Organs," Dr. Geo. S. Bel, New Orleans.

6. "Carbon Tetrochloride in the Treatment of Hook Worm Disease." Report of Cases, Dr. S. G. Hobson, New Orleans.

7. "Diagnosis and Treatment of Small Pox," Dr. J. G. Stulb, New Orleans.

Discussions by Drs. Ralph Hopkins and Oscar Dowling.

8. "Treatment of Tetanus," Dr. A. A. Herold, Shreveport.

9. "Report of 150 Cases of Typhoid, Without Death," Dr. S. J. Couvillon, Moreauville, La.

10. "Streptococcus Meningitis, with Reeport of an Unusual Case," Dr. S. Chaille Jamison.

SECTION ON PEDIATRICS.

Dr. M. S. Picard, Chairman, Shreveport, La.

No program received to date.

SECTION ON NERVOUS DISEASES.

1. "What Louisiana Is Doing for Her Insane," Dr. John N. Thomas, Pineville, La.

To open discussion, Dr. T. W. Evans, Alexandria, La., Dr. C. S. Miller, Jackson.

2. "What the State Is Not Doing for Its Mentally Diseased," Dr. Henry Daspit, New Orleans, La.

To open discussion, Dr. Joseph A. O'Hara, New Orleans, La., Dr. B. F. Gallant, New Orleans.

3. "A Conception of Psycho-Neuroses and Errors to Be Avoided in Their Diagnoses," Dr. E. McC. Connely, New Or- Orleans, La.

To open discussion, Dr. L. V. Lopez, New Orleans, La., Dr. W. J. Otis, New Orleans, La.

SECTION ON BACTERIOLOGY AND PATHOLOGY.

Dr. J. J. Wymer, Chairman, New Orleans, La.

"Etiology of Dengue Fever," Dr. Charles Duval, New Orleans, La.

"Transmission of Dengue Fever to the Experimental Animal," Dr. William H. Harris, New Orleans, La.

SECTION ON GENERAL SURGERY.

Dr. T. H. Watkins, Lake Charles, La., Chairman.

1. "Sarcoma of Bone, with Especial Reference to Malignancy," Dr. F. W. Parham, New Orleans, La.

To open discussion, Dr. R. Matas, New Orleans.

2. Subject of paper to be announced later. Dr. J. L. Wilson, Alexandria, La.

3. Subject of paper to be announced later. Dr. L. O. Clark, Lafayette, La.

4. "Osteomyelitis," Dr. Urban Maes, New Orleans, La.

To open discussion, Dr. John Oeschner, New Orleans, La.

5. "The Scope and Indications of Myomectomy in Fibroids of the Uterus," Dr. C. Jeff Miller, New Orleans, La.

To open discussion, Dr. Marion Souchon, New Orleans, La.

6. "Tetanus," Dr. P. Graffagnino, New Orleans, La.

To open discussion, Dr. R. O. Simmons, Alexandria, La.

7. "Surgical Shock," Dr. James Q. Graves and Dr. Jesse L. Adams, Monroe, La.

To open discussion, Dr. J. C. Willis, Shreveport, La.

8. "Arthroplasty," Dr. Herman Gessner, New Orleans, La.

To open discussion, Dr. Louis Levy, New Orleans, La.

9. "Congenital Arthritis with Ankylosis of Various Joints," Dr. Paul A. McIlhenny, New Orleans, La.

To open discussion, Dr. H. W. Kostmayer, New Orleans, La.

10. "Neurological Surgery," Dr. W. O. Ott, Rochester, Minn.

SECTION ON GYNECOLOGY AND OBSTETRICS.

Dr. H. E. Bernadas, Chairman, New Orleans, La.

1. "Conservatism in Dealing with Pelvic Infection," Dr. T. B. Sellers, New Orleans, La.

2. "The Utero-Sacral Ligaments and Their Relation to Descensus of the Uterus," Dr. J. F. Dicks, New Orleans, La.

3. "Plastic Operation on the Female Perineum," Dr. W. D. Phillips, New Orleans, La.

4. "Abruptio Placentate," Dr. H. E. Bernadas, New Orleeans, La.

Open discussion, Dr. H. E. Miller, New Orleans, La.

SECTION ON UROLOGY.

Dr. M. H. Foster, Alexandria, La., Chairman.

1. "An Appreciation of Some of the Modern Methods in the Diagnosis and Treatment of Syphilis," Dr. Frank J. Chalaron, New Orleans, La.

SECTION ON DERMATOLOGY.

Dr. R. A. Oriol, New Orleans, La., Chairman.

1. "Treatment of Tineal Infection of the Hands and Feeet," Dr. Jeffery C. Michael, Houston, Texas.

To open discussion, Dr. J. N. Roussel, New Orleans, La.

2. "Focal Infection a Cause of Erythema Multiforme," Dr. R. A. Oriol, New Orleans, La.

To open discussion, Dr. Ralph Hopkins, New Orleans, La.

SECTION ON RADIOLOGY.

Dr. Lester J. Williams, Baton Rouge, La., Chairman.

1. "Practical High Voltage X-Ray Therapy," Dr. S. C. Barrow, Shreveport, La.

2. "The Value of X-Ray Examination of Stomach and Duodenum to the General Practioner," Dr. Adolph Henriques, New Orleans, La.

3. "X-Ray Examination of the Solon," Dr. Leon J. Menville, New Orleans, La.

SECTION ON PUBLIC HEALTH AND SANITATION.

Dr. M. W. Swords, New Orleans, La., Chairman.

1. "Conservation of the Health of the Child," Dr. W. S. Leathers, Jackson, Miss.

Discussion, Dr. F. J. Underwood, Jackson, Miss.

2. "Malaria Control in Alabama," Dr. S. W. Welch, Montgomery, Ala.

Discussion, Dr. K. E. Miller, New Orleans, La.

3. "Venereal Disease Control," Dr. A. T. McCormack, Louisville, Ky.

Discussion, Dr. L. C. Scott, New Orleans, La.

4. "Health Relations of Louisiana to Countries of South America," Dr. Oscar Dowling, New Orleans, La.

5. "Group Care of Children," Dr. Maud Loeber, New Orleans, La.

SECTION ON EYE, EAR, NOSE AND THROAT.
Dr. A. L. Whitmire, Chairman, New Orleans, La.

1. "The Ear, Nose and Throat Man and the General Practitioner," Dr. Wm. Patton, New Orleans.

2. "A New Technique for the Treatment of Chronic Suppurative Otitis Media," Dr. M. P. Boebinger, New Orleans.

3. A Paper, Dr. Clyde Lynch, New Orleans.

THE COMMITTEE OF ARRANGEMENTS OF THE LOUISIANA STATE MEDICAL SOCIETY for the coming meeting in New Orleans, next April, is already actively engaged in making the necessary preparations for what it believes will be the largest and most successful meeting that this Society has ever held.

Besides the Commercial Exhibit, which promises to be of more than usual importance and interest and which will be roomy and readily accessible, a space just as conveniently located to be used for the Scientific Exhibits will be provided and the Committee hopes that the members of the Society will help to make this new feature a success by bringing with them or by sending in care of the Committee, Hutchinson Memorial Building, 1551 Canal street, new instruments, appliances, X-ray negatives, pathological specimens, or photographs of interesting cases. This exhibit can be made highly instructive and should be one of the important features of the meeting. Send exhibits to Dr. Amedee Granger, Chairman.

It is too early at this time to speak of the entertainment features other than to assure the out-of-town members that they and their ladies will be taken care of in a manner thoroughly in keeping with the best traditions of our meetings and that the annual stag affair this year will be a REAL BAMBOULA, with plenty of good things to eat and lots of amusement.

THE SEVENTH CONGRESSIONAL DISTRICT. The Seventh District Medical Society met at Crowley on Thurs., Feb. 15th. Headquarters were at the First National Bank Building. The meeting was well attended. The scientific program was preceded by a sumptuous banquet tendered the District Society by the active, enthusiastic Acadia Parish Medical Society and was served by the ladies of the M. E. Church, South. The musical entertainment was of a high character and contributed large-

ly to the feast. The scientific program, at which Dr. Craig presided and Dr. Morgan acted as secretary, follows:

Dr. D. C. Iles, Lake Charles: "Personal Experience with Tonsillectomy by the Schlender Method."

Dr. Harold G. F. Eduards, Lafayette: "X-ray Treatment of Diseased Tonsils."

Dr. George J. Dempsey, New Orleans: "Affairs of Bureau of Vital Statistics."

Dr. Maurice Gelpi, New Orleans: "Case Reports."

Discussion was followed by the election of officers, which will be announced later.

UNITED STATES CIVIL SERVICE EXAMINATION. The United States Civil Service Commission announces the following open competitive examination: Junior Medical Officer and Assistant Medical Officer (Roentgenology; psychiatry). Medical Officer (Tuberculosis, neuropsychiatry, internal medicine and diagnosis, physiotherapy). Applications will be rated as received until the close of business on July 3. The examinations are to fill positions in the Indian service, the Coast and Geodetic Survey, the Public Health Service, and the Veterans' Bureau. Competitors will not be required to report for examination at any place, but will be rated on the subjects of education and training, weighted at 30%, and experience, weighted at 70%. Definite specifications as to education and experience requirements, and salaries and allowances, are given in the printed announcement, which will be furnished upon request. Full information and application blanks may be obtained from the United States Civil Service Commission, Washington, D. C., or secretary of the board of U. S. civil service examiners at the post office or customhouse in any city.

THE ST. TAMMANY PARISH MEDICAL SOCIETY met on Thursday the 11th, 1923, at Covington, La. The attendance was large. The society entertained at dinner at the Central Hotel. The following officers were elected for 1923:

Dr. J. K. Griffith, President; Dr. G. A. Pennington, Vice-President; Dr. S. R. Leighton, Secretary; Delegate to Louisiana State Society, Dr. J. F. Polk; alternate, Dr. T. F. Young, Jr.

Addresses were made by Dr. Paul Gelpi, President of the State Society; Judge Prentiss Carter, Mr. D. H. Mason and Dr. W. L. Stevenson.

AT TULANE UNIVERSITY: The Bulletin of the Société Nationale de Chirurgie (Paris, January 16, 1923) announces the election of Professor Rudolph Matas, of Tulane University, as corresponding member of the society. This association was founded in 1843. Its membership is strictly limited, and it enrolls the greatest names in the history of surgery in France. Its published proceedings (Bulletine et Mémoirs) are known all over the world and are reckoned among the most valuable repositories of surgical knowledge and opinion.

Dr. Matas has also been notified of his election "by acclimation" on December 15, 1922, as a member of the Royal Academy of Medicine of Barcelona, Spain.

UNITED STATES CIVIL SERVICE EXAMINATION. Graduate Nurse, Graduate Nurse (follow-up). Applications will be rated as received until July 3, 1923. The United States Civil Service Commission announces an open competitive examination for graduate nurse, and graduate nurse (follow-up), for filling vacancies in the United States Veterans' Bureau and in the Indian and Public Health services.

Dr. George Dempsey, New Orleans, and Dr. Maurice Gelpi, New Orleans, attended the first meeting of 1923 of the Seventh District Medical Society at Crowley, on February 15th.

UNITED STATES CIVIL SERVICE EXAMINATION. Assistant Bacteriologist (food products). Receipt of applications to close March 6, 1923. The United States Civil Service Commission announces an open competitive eeamination for assistant bacteriologist. Vacancies in the Bureau of Plant Industry, Dept. of Agriculture, Washington, D. C., at $2,040 to $2,500 a year (plus "bonus"), and vacancies in positions requiring similar qualifications, at these or higher or lower salaries, will be filled from this examination, unless it is found in the interest of the service, to fill any vacancy by reinstatement, transfer, or promotion.

NAVY ADOPTS NEOARSPHENAMINE. The following letter of Rear Admiral E. R. Stitt, Medical Corps, United States Navy, was approved on Aug. 7, 1922, by the Bureau of Medicine and Surgery, in charge of Rear Admiral W. C. Braisted, Wash-

ington, D. C., and published for the information of the medical officers of the United States Naval Service, in the United States Naval Medical Bulletin, October, 1922:

July 7, 1920.

"To the Bureau of Medicine and Surgery:

"Subject: Recommendation that neoarsphenamine be substituted for arsphenamine in connection with use on board ships and at certain stations of the navy.

"1. I would recommend that the use of arsphenamine be discontinued on board ships of the navy and in its place to substitute neoarsphenamine. This same recommendation would apply to stations and smaller hospitals.

"2. In the larger hospitals where facilities for the administration of arsphenamine are satisfactory, the choice between arsphenamine and neoarsphenamine should be left to the discretion of the commanding officer.

"3. This recommendation is made for the following reasons:

"(a) In discussing fully this matter with the director of the hygienic laboratory he is of the opinion that most of the accidents attending the use of arsphenamine have been connected with errors in technic. In view of the simplicity of technic when using neoarsphenamine, many untoward results would be eliminated.

"(b) In the clinic of the Brady Institute, neoarsphenamine is used exclusively, and Dr. Young and his associates are unable to note any lessened therapeutic efficiency with this drug than when arsphenamine is used."

AT THE NEW ORLEANS POLYCLINIC, Graduate School of Medicine, Tulane University: In spite of still unsatisfactory financial conditions generally, the attendance at this school for the current session continues on a par with previous sessions and to all appearances will surpass last year.

IN THE EIGHTH CONGRESSIONAL DISTRICT: The Eighth Congressional District collaborator was sick in bed with an attack of influenza this time last month, and was therefore unable to send anything in to the Journal.

Dr. J. M. Oglesby and Miss Angela Leake were quietly married on December 20th, 1922. They are at home on the corner of Polk and Chester. The Journal extends felicitations and best wishes.

The regular meeting of the Rapides Parish Medical Society was postponed from Monday, February 5th, to Tuesday, February 13th, on account of unusually severe weather. The program consisted of a paper by Dr. R. B. Wallace entitled "Supernumerary Ribs," and another paper by Dr. George C. Antony.

In establishing the office of District Collaborator, it was the intention of the management of your Journal to make its subject matter more generally representative of the respective territories "back home," so that the official organ of the State Medical Society might be of more complete and direct service to its sustaining membership. That this purpose has not been more fully realized is due to the fact that while almost every one turns to the district happenings first thing to read the news, no one takes it upon himself to help gather some of this news by reporting to their district office medical items of interest. Thus the Collaborating Editor is left entirely dependent upon only such occurrences as may transpire within the limited precincts of his own personal observation.

Beginning with the April number of the Journal, a further effort will be made to improve this situation. The secretary of the Medical Society is requested to mail news items to this office March 12th to 15th from each of the following parishes: Sabine, Natchitoches, Winn, LaSalle, Vernon, Grant, Avoyelles, and Rapides. If the parish in which you live is not organized, response will be appreciated from any doctor who may read this.

If this request fails to secure an abundant response, an important announcement will appear in the April issue of the Journal, which should immediately interest every parish in the realm.

NATIONAL MUSEUM REPORTS NEW AND VALUABLE ACCESSIONS. The secretary of the Smithsonian Institution, in his recently issued annual report for the year ending June 30, 1922, gives a prominent place and favorable mention to the collections of South American insects received by the United States National Museum and to the group of rare and interesting live specimens of South American birds and mammals, donated to the National Zoological Park, through Dr. Mann, an associate of Dr. H. H. Rusby in his recent South American journey.

PROCEEDINGS OF THE AVOYELLES PARISH MEDICAL SOCIETY: The Avoyelles Parish Medical Society met at

Marksville, Thursday, January 25, 1923, at 10 o'clock A. M. Dr. Phillip Jeansonne, president, presided. The secretary, Dr. S. J. Couvillon was at his desk.

The following physicians answered the roll call: Drs. G. R. Beridon, Leonard Chatelain, W. A. Quirk, Philip Jeansonne, R. G. Ducote, G. R. Fox, S. J. Couvillon, Sylvin de'Nux, A. T. Barbin W. F. Couvillon, J. W. Plauche.

Dr. George R. Beridon, of Hessmer, was elected President; Dr. Sylvin de'Nux, of Marksville, Vice-President; Dr. S. J. Couvillon, of Moreauville, was re-elected Secretary and Treasurer. Dr. R. G. Ducote, of Bordelonville, was made the delegate to the 1923 State Meeting, with Dr. Philip Jeansonne, of Plaucheville, the alternate.

The chair made the announcement that owing to the death of Dr. Thomas A. Roy, one of the society's most active members, which occurred the evening previous, the society would dispense with its clinical program and adjourn at 12 M. and in a body repair to the home of the deceased at Mansura to pay our last respects to the departed confrere and offer condolences to the bereaved family. A wreath bearing the inscription from "Avoyelles Parish Medical Society" was conveyed to the home preceding the arrival of the society members.

The chair appointed a committee, composed of Dr. Beridon, Dr. Quirk, Dr. de'Nux, to draft resolutions of sympathy and condolences over the death of Dr. Roy and forward a copy to the family, to the Avoyelles journals for publication and one to appear in the proceedings of the society.

A resolution offered by Dr. W. F. Couvillon, duly seconded, that all physicians of standing of Avoyelles who have attained the age of 70, be made honorary members of the Avoyelles Parish Medical Society.

The question of the "renewal license law" was casually dealt with and a resolution presented by Dr. G. R. Fox, duly seconded, that the society as a unit refuse to pay the tax, which is regarded by the majority of the physicians of this state as unconstitutional, since it has been and still exists the custom that all applicants coming before the tSate Board of Medical Examiners were made to pay a fee to be examined and to be licensed to practice medicine in all of its branches in the State of Lou-

isiana, which fee furnishes adequate funds for the functioning of the board without additionally taxing the overtaxed physician.

Drs. Fox, Barbin and Couvillon were made a committee to draw up resolutions to that effect and to present them at the next meeting, copies of which to be sent into proper channels seeking to the abolishment of this law.

Through the request of Dr. S. J. Couvillon, councillor for the State Medical Society, the chair appointed Dr. W. F. Couvillon, Dr. W. A. Quirk, Dr. Philip Jeansonne on a "membership committee" with a view of inducing every physician of ethical standing in Avoyelles to become members of the State and Parish societies.

The society adjourned to meet the first Thursday in April at Hessmer.

ANNUAL MEETING OF THE EYESIGHT CONSERVATION COUNCIL OF AMERICA: The Eyesight Conservation Council of America held its annual meeting in New York City on the evening of February 6th at the Pennsylvania Hotel. The meeting was addressed by Homer E. Smith, M.D., Fellow of the American College of Surgeons and assistant surgeon of the Manhattan Eye, Ear, Nose and Throat Hospital.

ALL THOSE INTERESTED are cordially invited to be present at the Annual Congress on Medical Education, Medical Licensure, Public Health and Hospitals, March 5, 6 and 7, 1923, Florentine Room, Congress Hotel, Michigan Avenue and Congress Street, Chicago.

WHY NOT MOTOR TO THE AMERICAN MEDICAL ASSOCIATION CONVENTION at San Francisco, June 25 to 29? Many motorists in single cars, small parties and motor caravans from various parts of the United States are already in correspondence with the California headquarters of the convention. California is the motorists paradise. Any part of the state is now easily accessible from anywhere. For those interested in this form of travel nothing could be more delightful than to combine vacation and pleasure by coming from anywhere to the American Medical Association Convention by motor. Address communications to Dr. W. E. Musgrave, California Headquarters 1923 American Medical Association Convention, 806-9 Balboa Bldg., San Francisco.

AT THE MUNICIPAL HEALTH DEPARTMENT, CITY OF NEW ORLEANS: Combatting diphtheria was the major activity of the Health Department during the month of December, 1922. There were 57 active cases on the books December 1st; on December 10, 72 cases, which was the highest number. December 31 closed with 40 active cases on the books. Deaths recorded from this disease in December number 7.

The medical staff takes cultures from the patient and contacts before the case is dismissed from sanitary control. The City Board of Health will furnish, free of any cost, material for Shick testing and toxin-antitoxin immunization to any physician who applies for same.

SIXTH CONGRESSIONAL DISTRICT: The regular monthly meeting of the East Baton Rouge Parish Medical Association was held at the Istrouma Hotel February 14. The members of the East Baton Rouge Parish Graduate Nurses' Association were invited to attend the meeting as guests of the society. Dr. Tom Spec Jones read a paper on nursing which covered the subject from its incipiency to the present time, and proved very interesting to both nurses and doctors.' The president of the nurses' association, Mrs. Kreiger, who is also superintendent of the Baton Rouge Sanitarium, then read the last annual report of the Baton Rouge Sanitarium, which gave a clear outline of the work done in that institution during the year of 1922.

A resolution inviting the Louisiana State Medical Society to hold its 1924 meeting in Baton Rouge was unanimously adopted and the delegates to the State Society instructed to bring the meeting to Baton Rouge.

EYESIGHT CONSERVATION COUNCIL PROGRAM FOR EYESIGHT CONSERVATION IN SCHOOLS. Eye conservation is being carried into the public schools of the country in a very practical way as a part of the national campaign by the Eyesight Conservation Council of America, to better the health of America's millions of school children and industrial workers. There have been distributed to superintendents throughout the country, copies of Eyesight Conservation Bulletin No. 2, which presents a program for eyesight conservation day in schools. The Council is enlisting the services of the teachers in making visual

accuity tests, instructions for which are fully outlined in the bulletin.

TO THE FELLOWS OF THE AMERICAN COLLEGE OF SURGEONS: The Seventh Annual Clinic Week of The American Congress on Internal Medicine, will be held under the direction of the American College of Physicians in the amphitheatres, wards and laboratories of the leading institutions for practice and research in Philadelphia, April 2-7, 1923.

"The advantages and privileges of the sessions are available to a limited number of our surgical confreres. "Guest tickets," admitting the holder to all features of the week's work, will be issued, upon application to the secretary-general, at the nominal rate of five dollars. Requests should be made immediately. Hotel headquarters: Belevue-Stratford. Address all inquiries respecting "guest tickets," hotels, program, railway rates, etc., to the secretary-general. Frank Smithies, secretary-general, 1002 N. Dearbon Street, Chicago, Ill."

JAPANESE MEDICAL COMMISSION TO VISIT THE UNITED STATES. A recent cable dispatch from Tokyo announces the appointment of Baron Yoshihiro Takagi, chief surgeon and professor of surgery in the Tokyo Charity Hospital and Medical College, as a member of a commission of six Japanese doctors who will arrive in the United States early in March as guests of the Rockefeller Foundation for the purpose of studying American and Canadian medical institutions and methods.

The Japanese have made notable contributions to the progress of scientific medicine. The visit of this commission will give to American medical men a welcome opportunity for exchange of ideas with a group of scientists whose medical researches have given an international reputation to the hospitals and institutes with which they are associated.

THE OUACHITA PARISH MEDICAL SOCIETY met at its regular meeting with Dr. J. E. Walsworth presiding. The following program was rendered:

Dr. C. U. Johnson presented a case of varicelliform syphilis which opened an interesting discussion. Neuro-syphilis, extragenital chancres, the varieties of spirochetes, whether or not to do an adenectomy in the complicating adenitis of syphilis, the

treatment and the management of cases entered into the general discussion.

Dr. F. C. Bennett read a paper on "The Eye as a Diagnostic Factor in Cerebral Conditions." He said that "eye symptoms alone must not be considered conclusive but must be considered in connection with other symptoms. Eye symptoms are especially valuable in the diagnosis of cerebellar and labyrinthine lesions."

"Choked disc alone in cranial trauma is not sufficient to justify decompression." "Given a case of cranial trauma, choked disc, high and rising blood pressure, the indications for decompression would seem to be clear and definite." "Patients under middle age with sudden diplopia due to paralysis of the external rectus are most probably syphilitic." "Thrombosis of the lateral or cavernous sinuses give definite eye symptoms and may occur in otitic abscess or general infectious fevers."

Dr. G. M. Snellings read a paper on "Convulsions in Children." He stated that the greatest frequency was from six months to two years. He also discussed the hypothesis of incomplete development of the inhibitory function in early life as being the most logical predisposing cause. Also have a spasmophilic diathesis or a condition characterized by a degree of hyperexcitability of the central nervous system with a tendency of tonic and clonic spasms. Under the organic causes he discussed: Meningeal hemorhages at birth or any condition causing inflammation of brain and meninges, tetanus neonatorium, embolism and thrombosis. Under the functional causes he discussed: Improper feeding, hyperpyrexia from acute infections, intestinal parasites together with enlargement of the thymus as being the most frequent causes and the enlarged thymus being the most frequent cause in the fatal cases.

Dr. C. U. Johnson reported a case from the free clinic of contracted pelvis that had a Cesarean section and on account of the failure of the uterus to contract, was necessary to do a hysterectomy.

OUACHITA PARISH MEDICAL SOCIETY OF LOUISIANA, MONROE, LOUISIANA. Official program for 1923. Meeting place, Clinic Building, St. Francis Sanitarium, Monroe, La. Time, First Wednesday evening of each month as listed below. Seven-thirty o'clock.

OFFICIAL PROGRAM FOR 1923.

February 7, 1923, Wednesday, 7:30 P. M.: 1. Convulsions in Children, Dr. G. M. Snellings; 2. Eye as Diagnostic Factor in Cerebral Localization, Dr. F. C. Bennett.

March 7, 1923, Wednesday, 7:30 P. M.: 1. Goitre of Medical Jurisprudence, Dr. C. P. Gray; 2. Future of Medicine, Dr. I. J. Newton; 3. Malaria, Dr. G. M. Trezevant; 4. Bright's Disease, Dr. C. U. Johnson.

April 4, 1923, Wednesday, 7:30 P. M.: 1. Proper Appreciation of the Internist, Dr. Ellis Powell; 2. Types and Diagnostics of Pneumonia, Dr. I. J. Wolff; 3. Industrial Medicine, Dr. C. L. Mengis.

May 2, 1923, Wednesday, 7:30 P. M.: 1. Empyemia, Dr. Geo. Wright; 2. Statistics Gathered from Experience in Life Insurance, Dr. A. H. Gladden; 3. Strangulated Hernia, Dr. C. H. Moseley; 4. Swamp Fever, Dr. J. R. Ferguson.

JUNE, JULY, AUGUST VACATION.

September 5, 1923, Wednesday, 7:30 P. M.: 1. Mastotiditis, Dr. J. P. Bowen; 2. Maxilary Empyemia, Dr. P. L. Perot; 3. Burns, Dr. R. W. Faulk; 4. Management of Normal Labor, Dr. J. T. French.

October 3, 1923, Wednesday, 7:30 P. M.: 1. Syphilis, Dr. J. B. Vaughan; 2. Fractures, Dr. R. W. O'Donnell; 3. Diarrhea of Infants, Dr. O. A. Hill.

November 7, 1923, Wednesday, 7:30 P. M.: 1. Co-operative Medical Service, Dr. Thos. E. Wright; 2. Intestinal Obstruction, Dr. D. I. Hirsch; 3. Acute Otitis Media, Dr. A. L. Peters; 4. Appendicitis, Dr. A. G. McHenry.

December 5, 1923, Wednesday, 7:30 P. M.: Annual Banquet, Election of Officers, 1924; 1. Address by Retiring President, Dr. J. E. Walsworth; 2. After Care of Surgical Patients, Dr. J. L. Adams; 3. Uterine Tumors, Dr. J. Q. Graves; 4. Typhoid Fever, Dr. L. B. Newsom; 5. The Business End of Medicine, Dr. E. G. Calvert.

LIST OF COMMITTEES APPOINTED by the President of the Orleans Parish Medical Society to serve for the year 1923:

Judiciary Committee: Dr. Homer Dupuy, Chairman; Dr. R. Bernhard, Dr. S. M. Blackshear, Dr. J. Signorelli, Dr. E. Moss.

State Medicine and Legislation: Dr. F. R. Gomila, chairman; Dr. B. A. Ledbetter, Dr. P. J. Gelpi, Dr. J. A. Danna, Dr. J. A. O'Hara.

Scientific Essays Committee: Dr. P. Graffagnino, chairman; Dr. H. W. E. Walther, Dr. C. S. Tuller, Dr. L. J. Menville, Dr. J. F. Dicks.

Auditing Committee: Dr. J. E. Landry, chairman; Dr. E. D. Martin; Dr. J. M. Batchelor, Dr. L. A. Fortier, Dr. A. Henriques.

Library Committee: Dr. S. C. Jamison, chairman; Dr. M. J. Lyons, Dr. T. A. Maxwell, Dr. E. A. Ficklen, Dr. P. T. Talbot.

Condolence Committee: Dr. S. T. Mayo, chairman; Dr. A. O. Hoefeld, Dr. W. H. Seemann, Dr. P. B. McCutchon, Dr. W. A. Reed.

Criminal Abortion Committee: Dr. P. Michinard, chairman; Dr. E. L. King, Dr. W. Metz, Dr. H. V. Sims, Dr. R. B. Harrison.

Employes Compensation Committee: Dr. H. E. Bernadas, chairman; Dr. J. T. O'Ferrall, Dr. F. T. Beatrous, Dr. W. A. Love, Dr. J. O. Weilbacher.

Hospital Abuse Committee: Dr. M. P. Boebinger, chairman; Dr. J. A. Estopinal, Dr. P. Graffagnino, Dr. W. T. Patton, Dr. W. W. Leake, Dr. P. J. Kahle.

House Committee: Dr. C. P. Brown, chairman; Dr. B. R. Heninger, Dr. H. E. Miler, Dr. C. C. Bass, Dr. M. J. Lyons.

Librarian's Report Committee: Dr. A. E. Fossier chairman; Dr. J. F. Dunn, Dr. R. C. Voss, Dr. I. Tedesco, Dr. T. F. Kirn, Dr. G. H. Upton, Dr. H. P. Jones.

President's Report Committee: Dr. E. H. Walet, chairman; Dr. R. Matas, Dr. A. A. Pray, Dr. C. W. Duval, Dr. F. W. Parham, Dr. C. P. Holderith, Dr. E. D. Fenner.

Publication Committee: Dr. Lucien A. LeDoux, chairman; Dr. M. J. Gelpi, Dr. H. R. Unsworth, Dr. Chas. Chassaignac, Dr. L. H. Landry.

Relief Committee: Dr. H. Daspit, Chairman; Dr. P. Bohne, Dr. J. Menendez, Dr. A. Jacobs, Dr. W. A. Gillaspie, Dr. F. A. Larue, Dr. M. Couret, Dr. J. M. Koelle.

Secretary's Report Committee: Dr. W. H. Robin, chairman; Dr. S. Wilson, Dr. B. F. Galant, Dr. O. C. Cassegrain, Dr. J. B. Larose.

Treasurer's Report Committee: Dr. J. J. Wymer, chairman; Dr. Kotz Allen, Dr. A. H. Gladden, Dr. Frank Gallo, Dr. J. M. Hountha, Dr. E. S. Lewis, Dr. J. G. Harz.

Public Health Committee: Dr. G. F. Roeling, chairman; Dr. A. LeDoux, Dr. J. J. Irwin, Dr. H. E. Nelson, Dr. D. N. Silverman.

GOV. PARKER ENDORSES HOSPITAL DRIVE. At a recent meeting of the board of administrators of Charity Hospital New Orleans, Gov. Parker heartily endorsed the campaign for raising a fund of $1,800,000 for the enlargement of the institution's facilities. National Hospital Day, May 12, is the day that has been set for launching the campaign. Workers in the drive will cover the entire state. Every man, woman and child in Louisiana will be asked to give a dollar. Pres. F. W. Evans, of the board, requests that all who can give more should "give until it hurts" in order to support Charity Hospital in a way in which it should be supported.

Recently over 300 single beds in the hospital have been occupied by two patients each, such has been the demand for medical care by the sick of the State. Mr. Wm. Pfaff, chairman of finance, said that if the peoeple of the State could see this overcrowding there would be no difficulty in raising the money.

THE ASSIGNMENT OF COL. JOHN B. ELLIOTT, M. O. R. C., to the 87th Division, as commanding officer of the 312th Medical Regiment and divisional surgeon, with headquarters in New Orleans, has been announced by the War Department.

DR. JOSEPH O'HARA, coroner of New Orleans, was recently presented with a silver service by his many friends of the city, for faithful services rendered.

AN APPROPRIATION OF $650,000 has been approved by State authorities for the Leper Hospital at Carville, Iberville Parish, La. This will be sufficient funds to add 300 beds to the institution, which are much needed.

CONSTRUCTION OF NEW PROFESSIONAL BUILDING opposite Touro Infirmary is now proceeding without further delays. G. L. Miller & Co., Atlanta, Ga., are financing the structure.

DR. LOUIS LEVY has opened an office building for physicians at 2100 Tulane Ave. Dr. Levy occupies the first floor and on the second floor office suites for pathologist, urologist, orthopedist and eye, ear, nose and throat specialists are available.

HOTEL DIEU SISTERS HOSPITAL, New Orleans, has purchased twenty-five properties at cost of $200,000 bordering upon Tulane Avenue and Bolivar Street, which land they propose to use for their new building.

TOURO INFIRMARY, New Orleans, will soon order work upon their new additional wing. The new building is to contain the new clinics as well as to add 125 more ward beds.

DEATHS: Dr. T. A. Roy, aged 56, died at Mansura, La., January 24, 1923. Dr. Roy served as a member of the state board of health for the past fourteen years, and at the time of his death was vice-president of the Louisiana State Medical Society.

Dr. J. D. Grayhill, aged 74, died in New Orleans February 2, 1923.

THE LOUISIANA STATE MEDICAL SOCIETY

Will Meet in

NEW ORLEANS ON APRIL 10, 11 AND 12

BOOK REVIEWS AND NOTICES.

All new publications sent to the JOURNAL will be appreciated and will invariably be promptly acknowledged under the heading of "Publications Received." While it will be the aim of the JOURNAL to review as many of the works accepted as possible, the editors will be guided by the space available and the merit of respective publications. The acceptance of a book implies no obligation to review.

Handbook of Electrotherapy, by Burton Baker Grover, M.D. F. A. Davis Co., Philadelphia, 1921.

The author treats the subject in a comprehensive and interesting manner. The chapter on Hyperpiesia deserves attention. This handbook will be read with profit by practitioners and students.

A. G.

Starvation (Allen) Treatment of Diabetes, by Lewis Webb Hill, M.D., and Rena S. Eckman; with an introduction by Richard C. Cabot, M.D. W. M. Leonard, Boston, 1921. 4th ed.

The fourth edition of this book is proof of its popularity. The so-called Allen treatment of diabetes is well explained in this small volume, in such language as to be intelligible to one with only limited knowledge of dietetics. The diet lists contained in this volume, as well as the recipes for diabetic dishes will be found helpful, not only to diabetic patients but also to the general practitioner, in prescribing a diet for his diabetic patients.

A. E.

What to Do in Cases of Poisoning, by William Murrell, 12th ed., revised by P. Hamill, M.D., D.Sc., F.R.C.P. New York: Paul B. Hocher, 1921.

This little volume, in addition to the actual treatment of poison cases, gives much information of value.

It is, of course, impossible to compile a volume on any subject with which everyone can agree in its entirety and the reviewer finds some suggestions in the work under discussion that do not meet with his own ideas; for example, the use of apo-morphine in opium poisoning, which, if used at all, should certainly be used with extreme caution and only when the case is seen early.

Taken as a whole, the volume is well worth a place in the physician's and druggist's library.

O. W. B.

New Pocket Medical Formulary, by William Edward Fitch, M.D., 3rd ed., rev. Philadelphia: F. A. Davis Co., 1921.

This volume, like all similar works, serves a useful purpose and the one under discussion particularly shows much care and ability in its preparation. The volume not only contains an unusually large number of prescriptions but includes much other valuable information that has been digested for convenient use.

In the way of adverse criticism the reviewer will say that he regrets to see the use of many obsolete terms, and while these have been taken from highly authoritative sources, at the same time in transcribing them it would probably have been better for the author to have made the necessary changes and conformed the work generally to meet the accepted standards in prescription writing.

Illustrative of this might be mentioned, compound tincture of iodine, nitro-muriatic acid, ointment of petrolatum, and many others. The pharmacopeia has definitely fixed proper names for these drugs.

There is some fault to be found with the Latin, for example, putting the adjective before the noun it qualifies. Matters of this kind do not directly interfere with the value of the book and can easily be corrected in future editions.

O. W. B.

Opiate Addiction, by Edward Huntington Williams, M.D. New York: Macmillan Co., 1922.

This little volume contains much excellent matter. The style of diction is good and the volume, from the standpoint of its printing, paper, type, etc., leaves nothing to be desired. It is really pleasant and profitable reading.

In the way of adverse criticism the reviewer will state that he regrets to see the use of the old patent medicine names of many of the drugs that are discussed, such, for example, as veronal, trional, etc. It would seem desirable for the medical profession to confine itself, as far as possible, to the use of the proper names, where there is a proper name, in discussing drugs. This would particularly apply where the drug in question is included in the pharmacopeia.

There are some parts of the text with which some of us will find it impossible to agree. If we understand the writer correctly, his contention is that the Federal narcotic law has not resulted in any material benefit. There are many physicians today, busily engaged in their work from morning till night, who do not know of a single addict—the reviewer can place himself in this list, while in times past they were only too common. It will not be hard to find active and successful physicians who have not had an application for the illegitimate use of morphine or cocaine by an addict in the past two years.

It is possible that in the underworld the drug traffic goes on largely unabated, but among the substantial elements of society the reduction in the use of these drugs has been more than most of us had even hoped for. The law has not been in force sufficiently long for its full value to be realized but the accomplishments so far have been sufficient to justify the statement that the reviewer has often made, namely: That it is one of the two greatest laws ever written in the history of the world. O. W. B.

Origin and History of All the Pharmacopeia Vegetable Drugs, Chemicals and Preparations, with Bibliography, by John Uri Lloyd. Cincinnati, Caxton Press, 1921. Vol. 1 Vegetable Drugs.

This volume is a distinct addition to medical literature. It is well in keeping with other matter that has come from the pen of this distinguished author and scientist. Those of us who have had the privilege of a personal acquaintance with Dr. Lloyd feel a particular interest and confidence in any treatise that bears his name and the volume under review is everything that could be expected.

The works on materia medica are unfortunately deficient in drug history, in fact, this is practically demanded by teachers on this subject, as the time allowed for the course in most medical schools barely permits of the absolute essentials and the present tendency seems to be rather to curtail the meagre allowance of time that has obtained in the past.

In fact, there is so little talk about the essential medicines that it seems almost unfair to refer to some of our schools as medical.

The volume under review offers an ideal supplement to the literature that the doctor has had available in the past. It is not only overflowing with information but Dr. Lloyd has succeeded in carrying into its compilation his usual delightful style, which makes it intensely interesting reading.

It is cordially and unqualifiedly recommended to all students of medicine and its allied branches. O. W. B.

Protein Therapy and Nonspecific Resistance, by Wm. F. Peterson, M.D. The Macmillan Company, 1922, N. Y.

This text, consisting of 256 pages, is a valuable compilation of the data appertaining to nonspecific immunological and therapeutic

factors. The book is nicely arranged in various chapters considering different diseases and discussing those factors related to the nonspecific phase of each.

Peterson and Peterson and Jobling have contributed much of an original character to this subject and for this reason the author is all the more in a position to deal with this muchly discussed subject among laboratory workers.

While the text proper contains a great deal of interest and of value, the book is very much enhanced by the careful collection of literature consisting of over 50 pages of references which the author has compiled. W. H. H.

Aids to Chemistry, by William Partridge, F.I.C. 1921, William Wood & Company, New York.

This book of two hundred and seventy pages is intended for students who have had a course in chemistry and wish to refresh themselves as to the definition of the basic principles of the science.

The various elements are very briefly discussed and their most common salts mentioned. A relatively large space is devoted to normal organic compounds as well as synthetic combinations, including the principal alkaloids and certain other vegetable products. It is of value chiefly as a compend. J. A. L.

Neoplastic Diseases: A Treatise on Tumors, by James Ewing, A.M., M.D., Sc.D. Second edition revised and enlarged. Philadelphia, W. B. Saunders Co., 1922.

As the title implies, this is indeed a treatise on tumors and covers the subject more thoroughly and minutely than any other American work. Every subject of neoplasia is considered carefully and at length, including the theories as to the etiology, the life history and pathology.

The work is divided into two great divisions entitled General and Special Oncology. Under the heading Special Oncology there are 40 chapters dealing not only with most of the types of neoplasms separately, but also considering the several varieties of neoplasm occurring in an organ or system. An effort is especially made to emphasize the many distinct clinical and pathologic entities within the great group of neoplasia.

It is profusely illustrated, there being over 500 drawings and photographs. These illustrations are very clear and well reproduced and add greatly to the clearness of the text.

One of the most valuable points of the book is the extensive bibliography which covers more than 43 pages of references and is so arranged that any one interested in neoplasms of a particular organ can easily find many references.

The volume is very full of valuable information and to one somewhat familiar with neoplasia is easily digestible, but the novice, the multiplicity of terms applied to neoplasms of the same cellular origin but slightly different histological and clinical characteristics leads to confusion. However, it should be in the library of every practitioner of modern medicine, surgery and pathology.

The author can well be proud of his handiwork. J. A. L.

Diseases of Women, by Harry Sturgeon Crossen, M.D., F.A.C.S. Fifth edition, St. Louis: C. V. Mosby Co., 1922.

The fifth edition of this well-known and most excellent work lives up to the reputation established by its predecessors. The revision has been thorough, and in this task the author has been aided by several capable collaborators. Many new and most helpful illustrations have been added, bringing the total number almost to a thousand (to be exact, they number 934). Especial mention should be made of the photomicrographs, which are well done and are of course

of great assistance in arriving at a thorough understanding of the conditions described in the text.

As this is essentially a text-book of medical gynecology, the author very properly considers in great detail such matters as methods of examination, gynecological diagnosis and treatment (especially the non-operative), diseases of the external genitals and vagina, uterine displacements, pelvic inflammation, disturbances of function, etc. It is refreshing, in these operative days, to find a thorough discussion of the use of the various types of pessaries; the author seems to have rather a high opinion of the usefulness of these appliances in properly selected cases.

The chapter on "The Internal Secretory Glands in Relation to Gynecology," by Ehrenfest seems to condense practically all the available information which is worth while, and serves to emphasize the fact that we as yet know comparatively little about this extremely complicated subject of endocrinology. This chapter is very readable and is most timely.

By way of criticism, one might question the advisability of including chapters on the technique of abdominal section and post-operative care in a work which is predominatingly medical in type. Also, it would appear that some of the chapters are much too long, and could be advantageously subdivided, thus resting the eye of the reader and enhancing somewhat the general impression produced by the work. For example, chapter 1 covers 131 pages, and chapter 4 consumes 120.

From the mechanical point of view, the volume is very satisfactory, and the publishers are to be commended for the excellence of their work. E. L. K.

PUBLICATIONS RECEIVED.

P. Blakiston's Son & Co., Philadelphia: Endocrine Therapeutics, by Thomas Bodley Scott. Enlargement of the Prostate, by John B. Deaver, M.D., LL.D., Sc.D., F.A.C.S. Medical Diagnosis for the Student and Practitioner, by Charles Lyman Greene, M.D. Practical Handbook on the Diseases of Children, by Bernard Myers, C.M.G., M.D. (Ed.), M. R. C. P. (Lond.) The Surgical Diseases of Children, by Frederick C. Pybus, M.S., F.R.C.S. Practical Physiological Chemistry, by Philip B. Hawk, M.S., Ph.D.

J. B. Lippincott Co., Philadelphia and London: Nutrition of Mother and Child, by C. Ulysses Moore, M.D., M.Sc. (Ped.).

William Wood & Co., New York: Orthopedic Surgery, by Sir Robert Jones, K.B.E., C.B., and Robert W. Lovett, M.D., F.A.C.S.

Washington Government Printing Office, Washington, D. C.: Public Health Reports, Vol. 28, Nos. 1, 2, 3, 4.

Miscellaneous: High Frequency Practice, by Burton Baker Grover, M.D., The Electron Press, Kansas City. Participation of the Federal Government in Education, James J. Storrow, Boston.

REPRINTS.

Linfogranulomatosis Venéra y Bubón Climático, by Prof. Dr. W. H. Hoffman. Méthode de Récupération Fontionnelle, by Dr. Gabriel Bidou. Dimol in the Treatment of Summer Diarrhoea in Infants, by A. N. M. Davidson, M.R., C.S., Eng. Aluminum—Potassium Nitrate in the Treatment of Suppurative Conditions, Particularly Osteomyelitis, by Max Thorek, M.D. Public Health Report, Nos. 762, 796.

STATISTICAL DATA FOR THE MONTH OF JANUARY OBTAINED FROM THE RECORDS OF CITY BOARD OF HEALTH.

BIRTHS.

January, 1923—	White	Colored
Male	312	141
Female	315	124
Totals	627	265
By Physicians		481
By Midwives		411
Grand Total		892
Stillbirths		54

DEATHS.

	1921			1922	
	White	Colored		White	Colored
Male	184	124	Male	204	111
Female	150	114	Female	176	142
Totals	334	238	Totals	380	253
Under 1 year	69		Under 1 year		98

January, 1923—	Cases		Deaths	
	White	Colored	White	Colored
Diphtheria	92	4	4	0
Typhoid	25	7	5	2
Malaria	11	2	1	0
Scarlet Fever	17	0	1	0
Whooping Cough	37	3	3	0
Influenza	19	9	11	6
Measles	14	0	1	0
Cs. Meningitis	1	0	0	0
Tuberculosis	56	39	38	32

DEATHS.

January, 1923—	White	Colored
Cancer	30	11
Apoplexy	19	13
Endocarditis and Myocarditis	2	1
Angina Pectoris	4	1
Other Circulatory Diseases	96	54
Bronchopneumonia	14	18
Lobar Pneumonia	17	14
Other Respiratory Diseases	1	3
Diarrhoea and Enteritis	16	3
Appendicitis	5	1
Other Digestive Diseases	7	2
Acute Nephritis	7	2
Chronic Nephritis	22	17
All Other Genito-Urinary Diseases	3	5
Puerperal State	4	1
Malformations	3	5
External Causes	39	22

DEATH RATE PER 1,000 PER ANNUM FOR THE MONTH.

January, 1923—		Non-residents Excluded:
White	17.07	14.94
Colored	27.17	23.01
Total	19.79	17.29

Deaths from premature births, violence, etc., are not excluded.